



JAMES COOK
UNIVERSITY
AUSTRALIA

Bachelor of Science



Ready today for tomorrow

jcu.edu.au



Why JCU?

A STUDENT EXPERIENCE LIKE NO OTHER

- Access to world-class teachers
- Develop skills in state-of-the-art facilities
- Achieve exceptional employment outcomes
 - Benefit from small class sizes
 - Connect with professional networks
- Support through scholarships for merit and equity
 - Discover great accommodation options

UNIQUE TEACHING ENVIRONMENTS

Be inspired by JCU's living laboratories. Study and learn in state-of-the-art teaching facilities, World Heritage listed Great Barrier Reef and the Daintree Rainforest, tropical wetlands, and dry savannahs.

OUTSTANDING RATINGS

Study with the best. JCU is independently rated best in the world for Marine and Freshwater Biology* and second best in the world for Biodiversity Conservation.

TOP MARKS ALL ROUND

Graduate with confidence. JCU students receive the support to succeed with JCU Science, rated five stars for Learner Engagement^, and #1 in Queensland for graduate full-time employment outcomes^.

SUPPORT FOR YOUR SUCCESS

Explore JCU's range of scholarships, grants and bursaries and discover the right financial assistance to achieve your goals.

*CWUR 2017 ^Good Universities Guide 2022, Science and Mathematics



Bachelor of Science

- ✔ Develop your passion for innovation and make a genuine difference to your community and the environment. Undertake real-world research in unrivalled locations including the World-Heritage listed Great Barrier Reef, the Daintree Rainforest and dry savannahs.
- ✔ Access state-of-the-art research and teaching facilities, like JCU's The Science Place. Experience a leading-edge education and connect with world-class researchers.
- ✔ JCU students have the opportunity to tailor their degree to suit their passion. Learn the fundamentals of science in your first year, then select one or two specialisations to continue to build knowledge and skills in your chosen discipline. Expand your knowledge by choosing to study a minor or include elective subjects in your degree. Throughout your degree, you will develop key employability skills in your chosen science discipline.

COURSE DETAILS:

Locations:	Cairns, Townsville
Start Dates:	February, July
Duration:	3 years full-time, part-time available*
ATAR:	66.5
Assumed:	English (Units 3/4,C), Mathematical Methods (Units 3/4,C)
Recommended:	One of Biology, Chemistry, Earth and Environmental Science, Geography, Marine Science, Specialist Maths or Physics (Units 3/4,C).

Please visit the [handbook](#) for a detailed outline of the course structure.

*Part-time is available for domestic students only.

Majors

With this course, there are nine majors to choose from – a major is your area of expertise. You can choose to study one or two majors. Not all majors are available at all campuses.

Aquaculture Science and Technology

With lecturers who are world-leaders in tropical aquaculture research and development, discover the sustainable practices of aquaculture. Access to the JCU Marine and Aquaculture Research Facility will enhance your knowledge and provide current practical skills.

Throughout this major, you will explore the scientific and practical applications of breeding, rearing and harvesting of plants and animals in all types of water environments. You will understand the biodiversity of species and how they are farmed, the design of aquaculture systems, and the basics of nutrition.

Chemistry

Study in award-winning laboratories and gain an insight into the industry with excursions to local companies in the chemistry industry. You will benefit from small class sizes and the personalised approach of our lecturers.

Gain current skills and explore the many areas of chemistry including analytical chemistry, synthetic, organic and inorganic chemistry, and kinetics and mechanisms of chemical reactions. In your third year, you will learn a number of instrumental techniques widely used in the industry.

Data Science

Data and analytics capabilities have made a leap forward in recent years. The volume of available data has grown exponentially, more sophisticated algorithms have been developed, and computational power and storage have steadily improved.

Career opportunities in data science, big data and analytics are growing dramatically. Data scientists work in every industry – from defence departments to internet start-ups and financial institutions – and tackle big data projects on every level. They are among the most sought-after jobs in the tech world today.

Earth Science

Offered on both the Cairns and Townsville campuses, access the biodiverse region of North Queensland. Gain relevant practical skills by studying and assessing the surrounding environments such as both the Wet and Dry Tropics, and the Great Barrier Reef Marine Park.

Experience field trips where you will collect, analyse and interpret data. You will gain a thorough understanding of the effect of humans on the natural environment and build skills to develop solutions to lessen the impact. With access to the JCU Fletcherview Research Station, you will learn about resource and environmental impact assessment, mine site rehabilitation, and soil and water science.

Marine Biology

Learn from lecturers who are world-leaders and be equipped to address critical challenges facing marine and coastal ecosystems. You will study in a location that gives you access to one of the most diverse and fragile marine ecosystems in the world, the Great Barrier Reef.

By studying the surrounding habitats of the Great Barrier Reef, you will discover the impact that humans have on the marine environment and how the oceans and atmosphere interact. You will gain valuable employability skills through practical experiments and opportunities to visit the JCU Orpheus Island Research Station.

Mathematics

Develop the problem-solving, analytical and quantitative reasoning skills that are highly sought-after by employers worldwide. With small class sizes, you will get the one-on-one support required to excel as a mathematician.

Understand a number of mathematical techniques, data analysis, and multivariate statistical methods. You will learn how to formulate mathematical models to illustrate science and engineering problems, and use various techniques to help find solutions.

Molecular and Cell Biology

Learn how to amplify and edit DNA sequences and conduct laboratory-based and field-based projects. Throughout your degree, you will study the basis of health and disease at a molecular level and analyse the functions of a whole cell.

Gain hands-on experience using cutting-edge equipment and techniques. Study biochemistry, microbiology, biotechnology and bioinformatics, and have an in-depth understanding of molecular genetics. These structures and processes form the basis of all living matter and provide insights into complex biological interactions.

Physics

Explore some of the universe's most challenging questions. Accredited by the Australian Institute of Physics, this major will give you a broad range of practical and theoretical skills across various physics disciplines.

Physicists study the laws of nature; you will learn the fundamentals of energy, quantum mechanics, relativity, antimatter, weather and climate. Develop your ability to think critically and be experimental by exploring biophysics, molecular electronics, and organic solar cells. You will study the structure of matter, atomic and nuclear physics, quantum physics, oceanography and meteorology, and thermodynamics.

Zoology and Ecology

Have the opportunity to learn from lecturers with global standing, study amazing rainforests and diverse species, and go on field trips to Borneo or the Galapagos Islands. Offered at both our Townsville and Cairns campuses, you will study in one of the most biodiverse regions in Australia.

Study the science of the biology of plants and animals and the natural world that they live in. Discover many of the environmental threats to the Tropics by studying the effects of deforestation, infrastructure expansion, habitat fragmentation, over-hunting, and invasive species.



“At JCU, there is a lot of opportunity for hands-on learning and many of the science subjects integrate this into their coursework to give you heaps of experience working in a lab or out in the field. I really enjoyed all of the practical components as it gave me opportunities to use my knowledge in real-time situations and see the results of actual experiments. It also gives students the ability to use new equipment and tools — the laboratory facilities here at JCU are fantastic.”

Lauren Taylor

BACHELOR OF SCIENCE, MAJORING IN MOLECULAR AND CELL BIOLOGY

Career Opportunities

JCU Science graduates are broadly skilled and equipped to work across a variety of fields. They have the advanced analytical skills needed to enter the workforce and make a meaningful impact on the world.

Depending on your area of specialisation, you could work in a growing number of fields including aquaculture, fisheries management, chemistry, pharmaceuticals, mining, or biotechnology.

You could be employed in roles such as geologist, environmental scientist, oceanographer, mathematician, marine biologist, molecular and cell biologist, physicist, ecologist, conservationist or rehabilitation scientist, environmental and policy consultant, wildlife consultant or chemist.



“JCU is recognised globally for its excellence in research in several programmes, providing students with access to global leaders in their field that are making a difference. Our small class sizes provide students with access to lecturers who genuinely care about their progress and their studies. Our programmes are also embedded with work-integrated learning, making JCU graduates highly sought after in the workforce. The campus in Cairns is beautiful, which creates a lovely environment in which to teach and research. It also helps generate a relaxed atmosphere that encourages conversation and helps promote the learning experience.”

Dr Tasmin Rymer

LECTURER, COLLEGE OF SCIENCE AND ENGINEERING



JCU Accommodation

Study and live in some of the most interesting places in the world. Cairns and Townsville are on the doorstep of the Great Barrier Reef, magnificent rainforests, the savannah region and Outback Australia.

Living on-campus is a great way to make the most of your time at JCU. JCU Townsville, Bebegu Yumba campus, Douglas, has five different accommodation options housing over 1,200 students. JCU Cairns, Nguma-bada campus, Smithfield, features an accommodation complex for 300 students. Living on-campus is a great place to make new friends and immerse yourself in the JCU culture. All rooms at our on-campus residences are single board, with a single bed, study desk, chair, fan, air-conditioning and Wi-Fi. Each residence is different in regards to style of living, culture and atmosphere. There are options for fully catered or self-catered housing. Find out more at jcu.edu.au/accommodation



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