Discover your future in natural sciences

Undergraduate guide 2017
“Innovation distinguishes between a leader and a follower.”

Steve Jobs (1955–2011)
Entrepreneur, inventor, co-founder, chairman and chief executive of Apple Inc
Discover your future in natural sciences

Undergraduate guide 2017

Contact us

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Why study the natural sciences?

The sciences and mathematics are fundamental to our lives. Who can imagine a world without modern transport, smartphones, medicines and nutritious food?

The natural sciences and mathematics are about more than lab coats, test tubes and complicated equations. They embody a way of questioning, testing and analysing that enables you to draw conclusions based on evidence. They are a way of thinking about the world that will benefit you in ways far beyond any one specific discipline.

Together with technology and engineering, these fields are collectively known as STEM and are responsible for the great innovations that make our world better.

Studying the natural sciences or mathematics will enable you to innovate, make discoveries and tackle the biggest issues the world faces today – and into the future. You’ll also develop highly valued skills in communication and teamwork, opening the door to an almost limitless range of employment opportunities.

You can study areas as diverse as nanoscience, molecular biology, geosciences and psychology. With major technological advances opening up many new areas, from ecosystems to nanotechnology, there has never been a more fascinating time to study natural sciences.

– sydney.edu.au/stem
Why study at the University of Sydney?

The University of Sydney is one of the world’s top teaching and research universities and a member of the prestigious Group of Eight network of Australia’s leading universities. We teach more than 50,000 bright minds, including 10,000 international students from more than 145 countries.

We’ve taught 145 Olympians, seven prime ministers, two Nobel laureates, three astronauts, 110 Rhodes scholars and one Pulitzer Prize winner. Our students join an inspiring network of leading academics, distinguished graduates and alumni.

Since 1850, the University of Sydney has led the way in setting new directions for society. Leadership has always been at the core of the University’s values.

Our aim is to make lives better – not just by producing leaders, but through equipping our people with leadership qualities so they can meaningfully serve all of our communities at every level.

The cross-disciplinary nature of our faculties allows us to offer the widest range of academic programs of any Australian university, and enables students to tackle real-world problems impacting society today and in the future.

Key facts about the University of Sydney:

- year of foundation: 1850
- student enrolments: 54,305*
- academic staff: 3520*
- All of our research performed above or well above world standard in the latest Australian Government Excellence in Research for Australia rankings.
- number of alumni worldwide: more than 300,000
- number of countries represented by the student body: more than 145
- clubs and societies: more than 200
- sporting clubs: 43
- items in the University’s Library: more than 5.2 million
- number of student exchange agreements: more than 300 (in more than 30 countries)
- Chancellor: Belinda Hutchinson AM
- Vice-Chancellor and Principal: Dr Michael Spence.

*As at 31 March 2015
Where will your journey take you?

If you’re considering studying science or mathematics you’re probably wondering what career you might pursue. You’ll have a huge range of options to choose from when you graduate and the numbers are on your side: 75 percent of the fastest growing occupations require scientific and mathematical skills and knowledge. This means your prospects for future employment are bright.

“Once you have a solid grounding in science, it’s much easier to understand and develop the practical aspects in the workplace, and that’s what the University of Sydney gave me.”

Ben Smider
Senior Grower, Flavourwave Victoria
Ben Smider completed his bachelor’s degree in the Faculty of Agriculture and Environment. He now has an excellent role in the food industry.

Agriculture, food and agribusiness

Want to help solve the world’s problems and be highly sought after by employers? Then your ideal career may be in the thriving sectors of food and agriculture. You can help feed the world sustainably in the face of a changing climate.

You may also become a pioneer in emerging sectors such as carbon or water trading, or managing Australia’s natural resources. You could be employed with a commodities group, bank, local or international agribusiness, or government department.

You could work as an adviser, economist, scientist, teacher, trader, in policy, or as a marketer or communicator for the food industry.

You could design production processes that improve the quality and shelf life of our food, or develop robots with intelligent software to weed and harvest crops autonomously.

Whatever you choose, you can expect a career rich in options, challenges and rewards.
“A career is an interesting thing because you’re not entirely sure what is going to happen and where you’re going to wind up. Jobs like the one I do now didn’t even exist when I was studying at university.

“The Bachelor of Science teaches you a way of thinking, and mathematics is really about logic — it’s amazing how valuable this becomes in your career.”

Nick Leeder
Managing Director, Google France
When Nick was completing his Bachelor of Science with honours in Pure Mathematics at the University of Sydney, Google did not even exist.

Business, management and consultancy

Many corporate high achievers get their start in science and mathematics – qualifications known to offer a leading edge. Graduates with science and mathematics training are highly sought after in banking, financial services and insurance, particularly in model-based and applied mathematics. They are also in demand for their problem-solving abilities.

You will gain many skills in your studies that will be beneficial in careers across the business, management, government, defence and legal sectors. Strong abilities in logical reasoning and complex data analysis, for example, mean many science and mathematics graduates are snapped up by employers in management consulting.

Conservation, resources and sustainability

Science has always been a vehicle for improving our world, but a degree in science or veterinary science can also be a launchpad for working with people and places most in need. If protecting the world’s threatened species and magnificent habitats is your priority, a degree in science, environmental systems or veterinary science would be essential.

Australia’s rapidly growing and hugely important water industry employs many professionals with science and mathematics skills to solve a range of water-related problems, including controlling river flooding, designing agricultural irrigation systems and developing advanced treatment processes.

Sustainability is a growing field, with many major companies hiring sustainability and corporate responsibility managers to maximise the eco-efficiency of their businesses.
**Education, communications and media**

Do you enjoy studying science, but love telling people about it even more? Many jobs in education and media need dedicated experts to inspire and inform stakeholders or the public about the hugely important disciplines of science and mathematics.

If you’re interested in teaching, you can work in schools or beyond the classroom in educational facilities such as museums, zoos and science centres. If you enjoy engaging audiences in creative and diverse ways, you could look to the media, marketing and communications sector. Careers include science journalism across media outlets in print, online, radio or TV. Another popular role is a communications officer in a science institute. This role involves promoting the work done in the facility to the public.

**Entrepreneurship**

No matter which areas of study you focus on, you can combine them with your entrepreneurial drive to launch something new and exciting. Many of our students take advantage of the accelerator and support programs at the University to come up with innovative business ideas.

A recent survey by Startup Muster revealed more Australian start-up founders studied at the University of Sydney than any other Australian university. We support you through programs such as the Sydney Accelerator Network and INCUBATE, to help get your ideas up and running.

“The world has really changed since I started as a young entrepreneur. At that time there was absolutely no infrastructure for entrepreneurs. People didn’t even really discuss what is was.

“Generally speaking, it’s the new, up-and-coming businesses that are the next employers in this country. Technology is disrupting so many jobs in our economy. We need disruptive businesses to come through and create new jobs, which is why entrepreneurship is so important to Australia.”

**Dr Michelle Deaker**

Tech entrepreneur, Chief Executive and Managing Director, OneVentures

Michelle completed a Bachelor of Science and Master of Science and established leading venture capital firm OneVentures after a successful career in the IT industry. Michelle is also a mentor for the University’s award-winning start-up accelerator and entrepreneur program, INCUBATE.
“The idea is to build houses with batteries inherently included as part of their structure, and also to serve as a buffer for the grid, enabling an ever greater share of renewables to be connected.”

**Professor Thomas Maschmeyer**
Director, Australian Institute for Nanoscale Science and Technology

Professor Thomas Maschmeyer is an experimental chemist investigating how to selectively speed up (catalyse) chemical reactions. He and his team are working towards gel-based batteries that are cheaper, more robust, fire retardant, fast charging and ready to take advantage of rapidly improving solar energy technology.

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### Government, defence and legal

Science has never been so important to society, and real changes are only made when governments, advised by scientists, legislate for new approaches and technologies.

The disciplines of science, mathematics and statistics are crucial for important sectors including health, finance, ICT, emergency services, energy, water and food safety, primary industries, the environment and transport.

The federal government’s Defence Science and Technology Group employs a range of scientifically trained staff including materials scientists, mathematicians and psychologists.

Science graduates also work with legal firms in the areas of patents, intellectual property and in specialised areas such as forensics.

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### Health, medicine and psychology

A medical degree is not the only way to a rewarding career in improving individual and community health. Science underpins medical and health-related fields, so a Bachelor of Science is a stepping stone to gaining work in this sector.

A Bachelor of Medical Science could lead you to work in a laboratory researching diseases or in a hospital running clinical trials.

A Bachelor of Psychology will enable you to understand aspects of human behaviour through research, private practice or large organisations.

A science degree with a major in nutrition and metabolism could be your first step towards a career as a nutrition researcher or as a dietitian who plans food and nutrition programs and promotes healthy eating habits.
IT, communications and technology

Information and communications technology is ubiquitous in the 21st century: it underpins the fight against climate change; it is the backbone to video on demand in your lounge room; and it is central to discovering cures for disease and mapping the human genome.

This is an evolving and exciting field for science graduates, and the range of career possibilities grows with each technological advance.

Careers encompass diverse areas from business consulting and sales to software engineering, web development, multimedia and technical roles in research and product development.

ICT skills transfer well between countries, so experienced ICT professionals can find career opportunities almost anywhere in the world.

Research

There are no limits to what you can do as a researcher. If you can imagine something to investigate, you may be able to build a career doing it. You could, for example, work in the field of astronomy, investigating the universe and revealing its fundamental features. Australia has an outstanding reputation in this field – several renowned astronomers work here and various exciting projects are underway.

You could apply your knowledge of quantum physics to create more efficient and secure communications equipment or develop new ways of detecting and treating medical conditions.

Another rapidly expanding area is materials science, which involves analysing materials and creating new ones that can be used in a variety of applications. With Australia ranked highly for materials science, this area promises a huge range of career opportunities.

“Engineering and science are incredibly flexible degrees. They teach you how to think critically and solve problems — skills that can be applied across a variety of disciplines to create solutions to the challenges the world faces today, and to help shape the world of tomorrow. I think they are an excellent foundation for a diverse range of pursuits.”

Derek Muller
Engineer, scientist, TV presenter
Derek created popular YouTube channel Veritasium after studying engineering physics in Canada followed by a PhD in Physics Education Research at the University of Sydney.
Tomorrow’s technologies

Photonics, optics, quantum technology, data analytics and nanotechnologies are at the cutting edge of these technology sectors, and undergraduate degrees in science and mathematics can lead to a career in these fields.

If you’re trained in chemistry, physics or materials science, for example. The Australian Government considers nanoscience to be such an important field that it helped fund the new Australian Institute for Nanoscale Science and Technology at the University of Sydney.

If you graduate with expertise in life sciences, you can find rich career options in the biotechnology sector, where more than 1500 diagnostic, medical and therapeutic companies have created more than 40,000 jobs in Australia.

Veterinary and animal science

With the highest incidence of pet ownership in the world and advanced application of technology to livestock breeding, Australia has a thriving veterinary and animal industry. And while becoming a vet in private practice is a great career, there are many other equally rewarding options for animal science graduates who love working with animals.

Vets work in animal production, wildlife ecology or research on almost any animal imaginable. For a different route, a degree in animal sciences could see you working in pharmaceuticals, government services, zoos, artificial breeding, natural resource management, management of invasive animals, medical research, teaching at various levels, or working as an animal nutritionist – just to name a few.

“It’s hard to describe the feeling you get when you’ve helped an animal. I guess the term ‘veterinary science’ is quite fitting. On the one hand there is the ‘science’ part, which demands intelligence, logical thinking and problem solving, then on the other hand, there is the ‘veterinary’ part, which requires a connection with animals, empathy, compassion and often human understanding.

“When you combine these, the feeling is one of incredible achievement and self worth – you have accomplished something very few people are capable of, and in doing so made a positive difference to the lives of animals and other humans. That is what I call job satisfaction!”

John Debenham

After graduating, John moved to the Democratic Republic of the Congo to work at the Tchimpoung Chimpanzee Rehabilitation Centre.
Talented Student Program

The Faculty of Science’s Talented Student Program is a unique offering if you are seeking to expand your intellectual horizons and indulge your curiosity.

If you are a talented, high-achieving student, this flagship program is ideal for you. It offers additional challenging material – including exposure to cutting-edge research – to enable you to maximise your intellectual growth and potential.

Follow your curiosity and find out what the program has to offer:

− sydney.edu.au/science/tsp

Flexibility

In the Talented Student Program you will have greater flexibility in your choice of study so you can tailor your degree to align with your interests, needs and talents. You can enrol in units of study that may not otherwise be available.

Academic mentor

You will be matched with an academic mentor based on your shared scientific interests. This will ensure that you receive individual supervision and guidance at each stage of your degree.

Exposure to research

You will be introduced to research from your first semester, when you will have the opportunity to engage in research projects with small numbers of fellow students, a senior student mentor and an academic mentor.

Acceleration

If you are an exceptional student (for example, a participant in the International Mathematical Olympiad), you may be able to accelerate your studies by simultaneously undertaking an activity within the Talented Student Program and entering second-year study in that particular field. You may also accelerate your degree by studying more than the usual workload each semester (subject to academic approval).

Recognition

We include projects you undertake through this program on your University of Sydney transcript, so that potential employers are aware that you have completed challenging units of study.

Networking opportunities

Each year, the Faculty of Science holds a variety of activities and events exclusively for talented students, giving you networking opportunities with like-minded students, alumni, academic and research staff, and community and industry leaders.
Alison Hammond
Talented Student Program

Alison’s first-year project in physics inspired her to change the course of her studies in the double degree of Bachelor of Arts/Bachelor of Law, to major in then undertake an honours year in physics.

“I had originally planned to double-major in history and maths within my Bachelor of Arts degree, and I thought I would probably do honours in history,” she says, “By midway through second year, though, I was enjoying physics more, largely due to my first-year Talented Student Program project, so I decided to pursue a major in physics.

“The program really developed my ability to work individually or in a pair without constant supervision and instruction. There was both a need and a freedom to be self directed, self motivated, organised and able to articulate clearly what I was doing. All of these skills are important and I now use them every day.”
A unique learning environment

What sets the University of Sydney apart? Exceptional facilities, an innovative edge and the drive to challenge traditional ways of thinking.

We’re committed to providing an environment where your ideas and creativity can flourish. At the University of Sydney, you’ll be encouraged to challenge yourself, ask the big questions and make a real difference.

As a research-intensive university, you’ll learn from inspiring academics who have pushed the boundaries of knowledge to become leaders in their field. It is thanks to the outstanding calibre of their work that we rank among the top research universities in the world and offer a cutting-edge curriculum that is constantly fed by new research. All this adds up to a learning environment that provides unparalleled depth of subject knowledge and valuable research skills that will set you apart as a leader in your chosen discipline.

Investing in your future

Our plans to develop a new life, earth and environmental sciences precinct will bring together scientists like never before. For the first time, students and researchers from diverse faculties will work and learn together in a single, ultra-modern complex. It will foster multidisciplinary collaboration that will lead us into an exciting new era of education and research.

World-class infrastructure

Our laboratories, teaching spaces and learning hubs are designed to help you get the most out of your learning experience. They incorporate the latest technology and equipment and allow interactive study, research and collaboration.

Some of our first-rate facilities include:

Sydney Nanoscience Hub

Launched in 2016, and home to the Australian Institute for Nanoscale Science and Technology, this is the only facility of its type in the southern hemisphere. It is the nation’s first single institute in which students and academics can devise, fabricate, test and deploy new science at the nanoscale.

The $150 million dollar Sydney Nanoscience Hub includes the highest performing nanoscience facilities in the Asia-Pacific region, from a high-calibre cleanroom for making nanodevices to measurement laboratories and pioneering teaching spaces.
Centre for Carbon, Water and Food
Our population is growing and our planet is changing. This centre is dedicated to solving food and environmental issues. Opened in 2013, the centre’s purpose-built facility is located in the rural Sydney suburb of Camden.

Charles Perkins Centre
The Charles Perkins Centre brings together experts from various disciplines to study and find solutions for the modern epidemics of obesity, diabetes, cardiovascular disease, and related conditions. At the centre’s heart is a $385 million dollar research and education hub in which 1500 students and 900 researchers collaborate.

IA Watson Grains Research Institute
The biggest centre of its kind in Australia, this institute is finding better ways to grow cereals, pulses, beans and peas. Owned by the University and located in Narrabri, NSW, the institute spans 2268 hectares. Through this facility, we offer you unparalleled opportunities to learn about sustainable grain production.

Veterinary teaching hospitals
Our veterinary teaching hospitals employ the latest medical technology and highly respected specialists to care for small animals, wildlife, livestock and horses. This is where we provide real-world training to the next generation of veterinary practitioners and specialists.

Robotic dairy
In 2011, our innovative research piloted the world’s first robotic rotary milking system. Today, our robotic dairy milks our commercial herd around the clock, on demand. Application of the data from this pioneering technology is improving the lives, wellbeing and productivity of our cows and our dairy farmers.
What is university life like?

There’s so much more to university than studying.

At the University of Sydney we take your student experience beyond the lab and lecture theatre. We know that the more engaged you are with extracurricular activities and the more you enjoy your time here, the better you’ll do in your studies. We offer plenty of events and activities to help you get the most out of your time with us.

Making the transition

Our programs begin connecting you with classmates, academic staff and valuable advice before classes begin so you’re well prepared from day one. For science students, this program kicks off with the Science Students’ Transition Workshop – a one-day event held in late February just before Orientation Week. Once semester begins, you can find more support at SLAM (Science Link-up and Mentoring) lunches.

During Orientation Week you can also join introductory programs, welcomes and facilities tours with all our STEM (science, technology, engineering, mathematics) faculties.

Clubs and societies

Student societies play an invaluable role in enriching your university experience, and there are more than 200 to choose from. Whether you like chess, chocolate, juggling or something a little more academic, there is a club or society of like-minded people waiting for you. You can build lifelong friendships as well as professional networks that can open doors for you after university.

Whatever your course of study, there will be a related society for you to join. To find out more about the clubs and societies on campus, visit:

Hands-on opportunities

As part of our student community you’ll have the opportunity to get involved in any number of exciting projects.

You may choose to work with local communities, either as part of your course or in your own time as a volunteer.

You may like to become a student mentor, tutor or ambassador. Ambassadors let young potential students know about the possibilities in higher education and promote science and mathematics education, both on and off campus.

Career workshops and fairs

Most students start university wondering where their degree will take them. We help you discover the exciting jobs available with a range of special career programs.

For example, Jumpstart Your Career science events bring together academics and industry leaders to discuss jobs across different sectors – and how to get them.

The University also offers other networking sessions, workshops and forums where you can meet prospective employers and seek advice on your career:

– sydney.edu.au/careers
International opportunities

If you’re wondering where in the world studying science and mathematics can take you, just look at some of the exciting global projects our students work on.

Do you love tropical ecology and want to study international rainforests? Maybe you’ve got your eyes on high tech and want to create networks in Silicon Valley. Or would you just like to get out of your comfort zone for a semester? Taking part in an international placement, internship, exchange or study abroad program is an exciting and challenging way to broaden your horizons. A study abroad experience through the University of Sydney will give you a passport to discovery.

Study abroad and exchange

International exchange enables you to graduate with a truly global perspective. Combine study and travel and make the world your campus with opportunities available at more than 300 universities in 35 countries. There is even a $5000 science undergraduate exchange scholarship to help you get there.

− sydney.edu.au/study/overseas-exchange

International specialisation

The International Specialisation program allows students studying science in agriculture, environmental systems or food and agribusiness to take subjects that are continuous with their degree at universities in Europe and Asia.

Harrison Steel, a fifth-year Talented Student Program participant who is undertaking a Bachelor of Engineering (Mechanical (Space)) and Bachelor of Science (Advanced), has completed internships at NASA’s Ames Research Centre in California, USA, and Deutsches Elektronen-Synchrotron in Hamburg, Germany.
Undergraduate geology students visit Tibet regularly to study the geological evolution of the Himalayas.

Each year our physics and chemistry students travel to Nanjing University in China to conduct research projects in their area of interest. Their research experience in China is funded entirely by the universities and the students get to host Nanjing University students in Sydney the following year.

David Coleman and Michaela Mei Dolk, both studying the Bachelor of Environmental Systems, and Ming Jie Pan, who is studying for a Bachelor of Psychology, were some of the first students to win funding from the federal government’s prestigious New Colombo Plan to study in Asia in 2015.

For more than 20 years, Associate Professor Robyn Alders, from the Faculty of Veterinary Science, has worked in African and Asian countries to develop sustainable models for controlling the devastating poultry virus known as Newcastle disease. Her work supports improved poultry health and household food and nutrition security.

A Bachelor of Science in Agriculture student, Samuel Coggins, is using his time in Sri Lanka to learn about food security in Southeast Asia and promote agricultural science and its importance in South Asia.

Wendy Xiao, who is studying for a Bachelor of Science (Advanced) with a major in plant science, is travelling to the Solomon Islands to develop her knowledge of food security and development in the region.
Why mathematics is more than numbers

The discipline of mathematics underpins all science degrees and is the cornerstone of understanding the world around us.

By extending yourself and studying the highest level of mathematics you’re capable of at high school, you’ll learn how to question, test and analyse, laying the groundwork for a smooth transition to studying at university and preparing you to tackle the greatest real-world challenges of the future.

Majoring in mathematics can lead you to many exciting careers, including statistics, data analysis, air-traffic control, artificial intelligence, pattern recognition, meteorology, economic forecasting and more.

“We are in the era of big data, but what good is data without the ability to interpret and analyse it? We need people who have the skills to take that raw information and turn it into something useful.

“Maths underpins just about everything – from the technology in your smartphone to the banking and financial systems that support our economy and how we measure and predict our health. Maths is also the cornerstone of all scientific endeavour – so if we are training new scientists without a good understanding of maths, Australian science will soon be in trouble.”

Professor Nalini Joshi
Georgina Sweet Australian Laureate Fellow and Chair of Applied Mathematics, the University of Sydney
Mathematics course prerequisite from 2019

To help you thrive in your science and mathematics study and prepare you to tackle career challenges, the University of Sydney is introducing mathematics course prerequisites for some courses from 2019.

You will need to achieve Band 4 in the NSW Higher School Certificate Mathematics (not General Mathematics) or a similar result in equivalent interstate or IB subjects to enrol in a range of courses, including:

- Bachelor of Animal and Veterinary Bioscience
- Bachelor of Medical Science (first-year entry)
- Bachelor of Medical Science/Doctor of Medicine
- Bachelor of Medical Science/Doctor of Medicine (for Aboriginal and Torres Strait Islander applicants only)
- Bachelor of Psychology
- Bachelor of Science
- Bachelor of Science (Advanced)
- Bachelor of Science (Advanced Mathematics)
- Bachelor of Science/Bachelor of Arts
- Bachelor of Science/Bachelor of Laws
- Bachelor of Science (Advanced)/Doctor of Dental Medicine
- Bachelor of Science/Master of Nursing
- Bachelor of Science/Master of Nutrition and Dietetics
- Bachelor of Science (Advanced)/Bachelor of Laws
- Bachelor of Science (Advanced)/Doctor of Medicine
- Bachelor of Science (Advanced)/Doctor of Medicine (for Aboriginal and Torres Strait Islander applicants only)
- Bachelor of Science (Advanced Mathematics)/Bachelor of Laws
- Bachelor of Veterinary Biology/Doctor of Veterinary Medicine

If you defer your offer to study at the University in 2018 you will not be required to meet the mathematics course prerequisites. You will be assessed on the current requirements for your chosen course.

“Mathematics is the language in which the symphony of the universe is written. I mean it’s everywhere! Maths underpins all the STEM areas, as well as lots of other areas such as business and music, and anywhere where you need to apply logic and solve problems.”

Adam Spencer
Mathematics and Science Ambassador, The University of Sydney
Bachelor of Food and Agribusiness

Feeding the world is big business. The Bachelor of Food and Agribusiness is an innovative and multidisciplinary way to learn about the business and science of sustainably supplying food to a growing global population while gaining the work experience needed to launch a career in the next big boom industry.

UAC 511009  ATAR 80  IB 42
4 years full time

Major studies
Agribusiness: majors include agricultural trade, business, human resource management, international specialisation, marketing, quality assurance, retail, supply chain management, transport logistics and value adding.

Food science: majors include food biochemistry, food safety and packaging, global food security, international specialisation, microbiology, postharvest and product development

Assumed knowledge
Mathematics and Chemistry. Recommended studies: biology

Career possibilities
Food marketer, food product developer, health promoter, post-harvest researcher, food quality assurance specialist, food biochemist, food logistics manager, agricultural financier

Courses
Agriculture and Environment

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<td>Plant Function</td>
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<td>Produce Management</td>
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<td>Business Environment</td>
<td>Food Supply Chain Management</td>
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<td>Product Development</td>
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Bachelor of Science in Agriculture

A Bachelor of Science in Agriculture will prepare you for a thriving job market. Taught by industry and research leaders, you will learn how to address the most significant issues of our time, like food production and sustainable use of natural resources. With increasing demand for graduates, there’s never been a better time to make your mark.

**UAC 511001    ATAR 75    IB 27**

4 years full time

**Major studies**
Agricultural chemistry, agricultural economics, agricultural genetics, agronomy, animal production, entomology, environmetrics, food science, forest science, horticulture, hydrology, international specialisation, soil science.

**Assumed knowledge**
Mathematics and Chemistry

**Career possibilities**
Agronomist, sustainable agriculture researcher, plant geneticist, animal reproduction specialist, environmental microbiologist, agricultural journalist, commodities trader, precision soil scientist

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<td>Applied Statistical Methods</td>
<td>Animal Management</td>
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</tbody>
</table>

**Courses**

- **Year 1**: Rural Environment, Intro Statistics, Chemistry, Biology
- **Year 2**: Applied Statistical Methods, Agricultural Genetics, Plant Science, Soil Science
- **Year 3**: Food Chemistry, Plant Disease, Elective
- **Year 4**: Research Project A, Specialisation Unit
Bachelor of Science

A Bachelor of Science opens up a world of opportunity. Whether you dream about being at the forefront of research, learning how to analyse and think critically, or just want to help make the planet a better place, a Bachelor of Science will give you highly sought-after skills for a huge range of careers — from the sciences and beyond.

UAC 512040   ATAR 83   IB 30
3 years full time

Major studies
Anatomy and histology, biochemistry, bioinformatics, biology (animal, plant genetics), cell pathology, chemistry, computer science, environmental studies, financial mathematics and statistics, geography, geology and geophysics, history and philosophy of science, immunobiology, information systems, marine science, mathematics, medicinal chemistry, microbiology, molecular biology and genetics, nanoscience and technology, neuroscience, nutrition and metabolism, pharmacology, physics, physiology, plant science, psychology, soil science, statistics.

Assumed knowledge
Mathematics or HSC Mathematics Extension 1. Other assumed knowledge depends on the areas or programs studied.

Career possibilities
Astronomer, entomologist, geophysicist, mathematician, psychologist, medicinal chemist, microbiologist, science historian.

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<tr>
<th>Year 1</th>
<th>Semester 1</th>
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<tbody>
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Bachelor of Science (Advanced)

The Bachelor of Science (Advanced) offers exceptional opportunities to budding scientists hungry for a challenge, while still providing the signature flexibility of the regular Bachelor of Science. From independent research to in-depth problems and lectures that go beyond the norm, the Advanced program will give you the skills to embark on postgraduate study or to work at the forefront of research.

UAC 512041    ATAR 95    IB 37
3 years full time

Major studies
Refer to B Science. Majors available at the advanced level are anatomy and histology, biochemistry, biology, chemistry, computer science, environmental studies, financial mathematics and statistics, geography, geology and geophysics, immunobiology, information systems, marine science, mathematics, medicinal chemistry, microbiology, molecular biology and genetics, nanoscience and technology, neuroscience, pharmacology, physics, physiology, plant science and statistics.

Assumed knowledge
Mathematics or HSC Mathematics Extension 1. Other assumed knowledge depends on subjects chosen. Applicants are required to obtain marks in specified subjects in the HSC or equivalent to enrol in some advanced units of study.

Career possibilities
Optics researcher, plant cell physiologist, geologist, statistician, sensory perception researcher, renewable energy chemist, biochemist, science journalist.

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<tr>
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Bachelor of Science
(Advanced Mathematics)

The three-year Bachelor of Science (Advanced Mathematics) is ideal for talented students wanting to combine their interest in mathematics with other areas of science and technology. Skills such as constructing computer models, analysing complex situations and logical thinking will open up lucrative career paths like that of Sydney maths alumni Nick Leeder, now Director General of Google France.

**UAC 512042   ATAR 98   IB 40**
3 years full time

**Major studies**
Financial mathematics and statistics, mathematics, or statistics. You may choose a second major from those available in the B Science.

**Assumed knowledge**
HSC Mathematics Extension 2. Other assumed knowledge depends on subjects chosen. Applicants are required to obtain marks in specified subjects in the HSC or equivalent to enrol in some advanced units of study.

**Career possibilities**
Mathematician, statistician, stockbroker, investment banker, topology analyst, representation theorist, data analyst, bioinformatician.

---

Bachelor of Science/Bachelor of Arts

Pursue your passion for both humanities and science with the Bachelor of Science and Bachelor of Arts. The four-year double degree offers you a total of 70 majors as well as world-class research and teaching from two of the nation’s most respected university faculties.

**UAC 512094   ATAR 83   IB 30**
4 years full time

**Major studies**
Refer to B Science and B Arts. All students need to take some units of study in mathematics and interdisciplinary subject areas.

**Assumed knowledge**
Mathematics or HSC Mathematics Extension 1. Other assumed knowledge depends on subjects chosen.

**Career possibilities**
Refer to B Science and B Arts

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**Year 1**

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**Year 2**

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**Year 3**

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<td>Arts Major 2 or Arts Elective</td>
<td>Arts Major 2 or Arts Elective</td>
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Discover your future in natural sciences sydney.edu.au/science
Bachelor of Science/
Master of Nutrition and Dietetics

The five-year Bachelor of Science and Master of Nutrition and Dietetics provides the training you need to launch straight into a career in nutrition and dietetics. It provides a solid foundation in science plus a two-year master’s degree that has full accreditation from the Dietitians Association of Australia (DAA).

UAC 512099  ATAR 98.5  IB 41
5 years full time

Major studies
Refer to B Science: You will need to complete a major in one of the following areas: biochemistry, microbiology, nutrition and metabolism, physiology or psychology. For M Nutrition and Dietetics: clinical nutrition, nutritional science or public health nutrition.

Assumed knowledge
Mathematics, Chemistry and Biology.

Career possibilities
Dietitian, nutritionist, biochemist, obesity researcher, human physiology researcher, public health policymaker, sports dietitian, metabolism scientist.

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<tr>
<th>Year 1</th>
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<th>Semester 2</th>
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<td>Physiology</td>
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<tr>
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<tr>
<td>Dietary Intake and Nutritional Assessment</td>
<td>Public Health and Community Nutrition</td>
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<td>Dietetics Professional Studies</td>
<td>Medical Nutrition</td>
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<td>Methods in Nutrition Research</td>
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<tr>
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<td>Nutrition Research Project</td>
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</table>

* You need to complete a combination of two of these three units. For the third unit, you need to choose an intermediate science elective.

** Major 1 needs to be one of the following five majors: Biochemistry; Microbiology; Nutrition and Metabolism; Physiology; or Psychology. It is also possible to complete a second major from those available in the B Science.
Bachelor of Liberal Arts and Science

With its flexibility and huge choice of majors, the Bachelor of Liberal Arts and Science provides you with a background in both the humanities and the sciences, and gives you useful skills that will make you highly valued by potential employers in jobs across the market. From writing and presenting to thinking ethically and critically, this degree is your preparation for life beyond the classroom.

UAC 512009  ATAR 70  IB 25
3 years full time

Major studies
You need to choose at least one major from the major studies listed in the B Science or B Arts, please see:
− sydney.edu.au/courses

Assumed knowledge
Depends on the subject areas chosen.

Career possibilities
Science media adviser, science historian, science documentary maker, algebraic geometrist, theoretical chemist, mammalian ecologist, human resources manager.

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<tr>
<th>Year 1</th>
<th>Semester 1</th>
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This sample course structure is for the Bachelor of Liberal Arts and Science – Science stream.
Bachelor of Medical Science

Whether you want to go into practice as a doctor or dentist, or work at the forefront of research, the Bachelor of Medical Science will give you the essential foundation for a rewarding career improving the health of people and the community.

UAC 512080  ATAR 90  IB 33
3 years full time

Major studies
Anatomy and histology, biochemistry, cell pathology, immunology, microbiology, molecular biology and genetics, neuroscience, nutrition and metabolism, pharmacology, physiology. Refer to B Science for additional science majors.

Assumed knowledge
Mathematics and Chemistry and either Physics or Biology.

Career possibilities
Histologist, biochemist, pathologist, microbiologist, anatomy researcher, infectious diseases researcher, geneticist, doctor (after further study in medicine).

Year 1

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<tr>
<th>Semester 1</th>
<th>Semester 2</th>
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<tr>
<td>Biology</td>
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Year 2

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* You may choose to spread your core medical science units over second and third year

Bachelor of Psychology

The Bachelor of Psychology is ideal if you know you want to understand human thinking and motivation. By the end of the four-year degree, you will have the basis for provisional registration as a psychologist in Australia and enough training and experience to start working right away.

UAC 512085  ATAR 96  IB 38
4 years full time

Major studies
For Arts stream: Psychology and refer to B Arts for the list of available majors.
For Science stream major: Psychology.

Assumed knowledge
Science stream: Mathematics. Both streams: Other assumed knowledge depends on subjects chosen.

Career possibilities
Clinical psychologist, neuroscientist, organisational psychologist, market researcher, advertising executive, social psychology researcher, learning and attention researcher.

Year 1

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<th>Semester 1</th>
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Year 3

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Year 4

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<tr>
<td>Psychology Honours</td>
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* Mathematics units are not required if you complete the Arts stream
Other degree options

Bachelor of Commerce/Bachelor of Science
Our Bachelor of Commerce offers a wide variety of subject options, immersive learning experiences and a strong commercial grounding in business. Our Bachelor of Science brings you to the forefront of research, refining your critical thinking skills. In this combined degree you will develop a unique set of analytical and management skills, opening up a world of opportunity in the private and public sectors.

UAC 511535  ATAR 95  IB 37
5 years full time

Bachelor of Education (Secondary Education: Science)/Bachelor of Science
The Bachelor of Education (Secondary Education: Science) and Bachelor of Science gives you a professionally accredited qualification and covers professional teaching, special education, international education, and information and communications technology. Science teaching areas on offer include biology, chemistry, earth and environmental science, geography and physics.

UAC 511608  ATAR 83  IB 30
5 years full time

Bachelor of Education (Secondary: Mathematics)/Bachelor of Science
Pursue your passion in sciences and mathematics and become a specialised secondary school teacher in these areas in New South Wales, Australia and overseas. Develop strong practical and theoretical knowledge in this professionally accredited program offering science teaching areas including biology, chemistry, earth and environmental systems, geography and physics.

UAC 511607  ATAR 83  IB 30
5 years full time
Bachelor of Medical Science/Doctor of Medicine

The Bachelor of Medical Science and Doctor of Medicine gives you the opportunity to study across the medical sciences before medicine. With a deeper understanding of the fundamentals that underpin the health profession, you’ll be better prepared for any career in medicine, from specialisation to research and teaching.

UAC 512097  ATAR A+C (99.95)  IB A+C (45)
7 years full time

Bachelor of Science (Advanced)/Doctor of Medicine

The Bachelor of Science (Advanced) and Doctor of Medicine gives you the opportunity to study science before medicine. With a deeper understanding of the fundamentals that underpin the health profession, you’ll be better prepared for any career in medicine, from specialisation to research and teaching.

UAC 512097  ATAR A+C (99.95)  IB A+C (45)
7 years full time

Bachelor of Science (Advanced)/Doctor of Medicine (for Aboriginal and Torres Strait Islander applicants only)*

The Bachelor of Science (Advanced) and Doctor of Medicine gives you the opportunity to study science before medicine. With a deeper understanding of the fundamentals that underpin the health profession, you’ll be better prepared for any career in medicine, from specialisation to research and teaching. This degree is for Aboriginal and Torres Strait Islander applicants only.

UAC 512097  ATAR A+C (99.95)  IB A+C (45)
7 years full time

Admission requirements: Double-degree Science/Medicine

In your first three years you will undertake an advanced science or medical science course. Along with your science studies, you will also complete a compulsory zero credit point unit in which you’ll research an aspect of medicine – arranged by consulting with academics at Sydney Medical School.

In the medical curriculum we emphasise practical delivery, employing problem-based learning founded on relevant medical issues. From your first year in the MD through to your final year, you will have contact with patients.

To enrol in double-degree medicine, you are expected to have a domestic ATAR of 99.95 and an international ATAR of 99.5 or higher (or equivalent).

*A+C: This denotes a combination of ATAR (or equivalent) plus additional selection criteria.

Admission requirements: Double-degree dentistry

For admission to the double-degree dentistry program you will need a minimum ATAR of 99.5 or equivalent for domestic and international applicants.

Please note: Admission criteria and application processes for these courses are subject to change without notice.
Bachelor of Science/Bachelor of Laws
Many industries need professionals who can understand and translate complex science – law is one of them. With a Bachelor of Science and Bachelor of Laws, you will graduate with two degrees and a suite of specialist skills that will allow you to carve out a niche in the legal sector, with jobs across patents, intellectual property and even forensics.

UAC 511801  ATAR 99.5  IB 43
5 years full time

Bachelor of Science/Master of Nursing
As well as providing you with the basis for becoming a registered nurse in Australia, the combined Bachelor of Science and Master of Nursing imparts a deep understanding of the biology underpinning human health. It will greatly boost your knowledge base and career options in this rewarding sector of medicine.

UAC 511914  ATAR 83  IB 30
4 years full time

Bachelor of Engineering Honours/
Bachelor of Medical Science
This five-year combined degree links the core elements of engineering and medical science. The technology-based engineering skills you develop during your studies will be complemented by skills in medical sciences. It forms an ideal base for postgraduate research or graduate studies in medicine or dentistry. You can combine any engineering stream with a Bachelor of Medical Science.

UAC 511790  ATAR 90  IB 33
5 years full time

Bachelor of Engineering Honours/
Bachelor of Science
This combined degree emphasises the strong scientific foundations of engineering. It will expand your career options by giving you two qualifications with just one extra year of study. In addition to your engineering stream, you will complete a major in science. You can combine any engineering stream with a Bachelor of Science.

UAC 511770  ATAR 90  IB 33
5 years full time

Bachelor of Information Technology/
Bachelor of Medical Science
This five-year combined degree will allow you to complement your IT skills with those from medical science, biomedicine and bioinformatics. You will choose either computer science or information systems for your IT stream while also studying foundation science followed by senior units of study in the clinical sciences.

UAC 511763  ATAR 92  IB 34
5 years full time

Bachelor of Information Technology/
Bachelor of Science
This combined degree emphasises the natural synergy between science and technology. In your IT studies you can pursue either computer science or information systems subjects, while also completing core units in selected science areas such as mathematics, physics, biology, chemistry, geography or psychology.

UAC 511764  ATAR 92  IB 34
5 years full time
Bachelor of Animal and Veterinary Bioscience

This course is your passport to a career working with animals. You will develop an excellent foundation in science, and this flexible degree will give you the freedom to tailor your studies to suit your interests within the field of animal science.

UAC 512105  ATAR 85  IB 31
4 years full time

Major studies
Areas of study include animal behaviour, animal nutrition, animal structure and function, and animal welfare. You can also complete an optional major from the following: animal genetics and biotechnology, animal health and disease, animal production systems, or wildlife conservation and management.

Assumed knowledge
Mathematics and Chemistry. Recommended studies: Biology.

Career possibilities
Animal infectious diseases researcher, animal pharmaceutical developer, animal welfare agency manager, food safety scientist, wildlife conservation manager, animal biochemist, animal geneticist, veterinary public health manager.

Year 1

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Semester 2</th>
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<tbody>
<tr>
<td>Understanding Landscapes</td>
<td>Animal Management</td>
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<tr>
<td>Biology</td>
<td>Biology</td>
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<tr>
<td>Chemistry</td>
<td>Chemistry</td>
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<tr>
<td>Intro Statistics</td>
<td>Animal Bioscience</td>
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</tbody>
</table>

Year 2

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<tr>
<th>Semester 1</th>
<th>Semester 2</th>
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<tbody>
<tr>
<td>Animal Energetics and Homeostasis</td>
<td>Animal Conservation Biology</td>
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<tr>
<td>Animal Structure and Function</td>
<td>Animal Structure and Function</td>
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<tr>
<td>Agricultural Genetics</td>
<td>Intro Veterinary Pathogenesis</td>
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<tr>
<td>Statistical Methods</td>
<td>Agricultural Economics</td>
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</tbody>
</table>

Year 3

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<th>Semester 1</th>
<th>Semester 2</th>
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<tbody>
<tr>
<td>Animal Reproduction</td>
<td>Animal Nutrition</td>
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<tr>
<td>Professional Development</td>
<td>Animal Genetics</td>
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<tr>
<td>AVBS Elective</td>
<td>AVBS Elective</td>
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<td>AVBS Elective</td>
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Year 4

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<tr>
<th>Semester 1</th>
<th>Semester 2</th>
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<tbody>
<tr>
<td>Animal Production or Genetics Electives</td>
<td>Animal Production or Genetics Electives, or Honours Research Project</td>
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</table>
Bachelor of Veterinary Biology/Doctor of Veterinary Medicine

The Bachelor of Veterinary Biology/Doctor of Veterinary Medicine provides you with both a scientific foundation and specialist clinical and medical experience. With its integrated, cross-subject approach designed for understanding real-world situations, the six-year course will turn you into a global professional at the cutting edge of modern veterinary medicine.

UAC 512101  ATAR A+C  IB A+C
6 years full time

Major studies
Animal behaviour and welfare science, animal diseases and pathobiology, animal husbandry, cell biology, clinical and professional practice, pharmacology, veterinary anatomy and physiology, veterinary conservation biology, veterinary medicine, veterinary public health, veterinary surgery.

Assumed knowledge

Career possibilities
Veterinarian, veterinary geneticist, small animal veterinarian, livestock veterinarian, equine veterinarian, biosecurity researcher, veterinary cardiologist, public health policy maker.

A+C: This denotes a combination of ATAR (or equivalent) plus additional selection criteria. For more information please visit: sydney.edu.au/courses
### Year 1
- Biology
- Chemistry
- Animal Health Production
- Statistical Methods
- Electives

### Year 2
- Animal Structure and Function
- Animal Genetics
- Animal Nutrition
- Introductory Veterinary Pathogenesis
- Electives

### Year 3
- Veterinary Sciences
- Population Health, Welfare and Production
- Professional Practice
- Animal Pathobiology
- Research

### Year 4
- Veterinary Sciences
- Individual Animal Health and Welfare
- Veterinary Clinical Pathology
- Animal Disease
- Research

### Year 6
- Intensive Animal Health and Production
- Large Animal Health and Production
- Small Animal Medicine and Therapeutics
- Veterinary Diagnostic Imaging
- Research

### Bachelor of Veterinary Biology/Doctor of Veterinary Medicine (combined degree) tuition fees

This combined degree has a combination of undergraduate components – Bachelor of Veterinary Biology in Years 1 and 2 – and postgraduate components – Doctor of Veterinary Medicine (DVM) – in Years 3 to 6.

For Commonwealth-supported students, the Year 1 student contribution amount listed on the course page at sydney.edu.au/courses is an indication only of the amount that you will pay in the advertised calendar year of study, for full-time study of 48 credit points. The student contribution amount is subject to annual increases for each year of your study in the combined degree (subject to a Commonwealth-specified cap), effective at the start of each calendar year.

The exact amount that you will pay also depends on the specific units of study in which you enrol as a Commonwealth-supported student in the combined degree. In the years in which you are undertaking postgraduate (DVM) units of study, you will be paying a higher student contribution amount.

At the time of publication, the University is unable to provide you with an indication of your student contribution amount for Years 2 to 6 of the combined degree.

For more information about fees, please contact the future student information centre on 1800 SYD UNI (1800 793 864) or +61 2 8627 1444 (outside Australia) or visit sydney.edu.au/courses/ask_a_question
How to apply

**Step 1: Choose your course**
Visit sydney.edu.au/courses

**Step 2: Check the entry requirements**
Admission to the University of Sydney is highly competitive. You need to meet specific academic requirements before we can make an unconditional offer of admission. For most courses, entry is based on your ATAR (Australian Tertiary Admission Rank) or equivalent. For details visit our website:
- sydney.edu.au/ug-entry

Additional English language requirements can also apply. For more information refer to:
- sydney.edu.au/ug-int-english

**Step 3: Explore your entry options**
If you’re not sure you’ll reach the ATAR cut-off for your preferred course, find out if you’re eligible to apply for one of our alternative entry pathways.
- sydney.edu.au/access

**Step 4: Submit your application with the relevant documents**
If you’re a domestic student, you need to submit your application online through the Universities Admissions Centre (UAC) website:
- www.uac.edu.au

You will also need to submit your application through UAC if you are an international student completing:
- a current Australian Year 12 secondary school examination
- a current International Baccalaureate (IB) diploma in Australia or New Zealand, or
- a current New Zealand Certificate of Educational Achievement Level 3 qualification

All other international students need to apply directly to the University using the ‘apply now’ button on the page for your chosen course at:
- sydney.edu.au/courses

**Key dates**

**August 2016**
The best way to get a feel for the campus is to visit us on Open Day, Saturday 27 August 2016. Explore the campus, enjoy the atmosphere, and learn more about our courses and facilities by attending mini-lectures, activities and tours.
- sydney.edu.au/open-day

**September 2016**
- Submit your application to UAC no later than 30 September.
- Scholarship applications open.

**January 2017**
- Attend Info Day, Thursday 5 January 2017. Experience campus life and get last-minute advice about your course and career options.
- Finalise your Main Round UAC preferences no later than the first week of January
- Accept your Main Round UAC offer within one week of receiving it (to avoid losing your place)

**February 2017**
The best way to get a feel for the campus is to visit us on Open Day, Saturday 27 August 2016. Explore the campus, enjoy the atmosphere, and learn more about our courses and facilities by attending mini-lectures, activities and tours.
- You may receive UAC offers following the main round if you submitted your application late, or did not receive an offer in the main round, and your preferred course is not already full
- Attend Orientation in the week before semester starts

**March 2017**
Semester 1 begins
Get a head start

It’s never too early to start thinking about your university studies. We offer a number of programs, workshops and activities you can participate in to get a head start.

Throughout the year, we invite high school students to visit our campus to experience what it’s like to study science, mathematics, agriculture and veterinary science.

You can participate in fun, interactive workshops, tour our facilities and talk to our current students about study options and life at Sydney.

Our student ambassadors can also come to your school and run tailored activities with you and your classmates. For more information about campus and school visits, check out our website and speak with your science teacher or careers adviser:
- sydney.edu.au/science/outreach/high-school
If you read only one thing, read this.

Your journey to university is as unique as you are.

At the University of Sydney, you have the opportunity to forge your own path. You can customise your course, and get involved in extracurricular activities to personalise your uni experience.

To learn more, come and see us on Open Day, call our helpline or visit our website:

sydney.edu.au/ask
1800 SYD UNI (1800 793 864)

Open Day: Saturday 27 August 2016
Info Day: Thursday 5 January 2017