



Charles Sturt
University

Join a new chapter
in civil engineering
education

Student guide

We're in the top 2 in Australia

for overall student experience in
engineering and technology courses*



2022 Undergraduate Course 2022/23



Bridget and Ryan talk about their design project
with professional engineers from industry at
EngFest, our annual engineering exhibition

Are you ready to change the world?

Where would we be without civil engineers?

From building urban infrastructure to understanding our environment, from making industry more efficient to harnessing new technologies, civil engineers in every field share a single passion – making things better.

Get started with Charles Sturt Engineering.

Choose one of three civil engineering degrees and gain the skills, insight and experience needed to build a rewarding career.

Civil engineers are essential as they provide the design and infrastructure that builds and forms our communities. They improve the state of the world, amplify human capability and make people's lives safer and easier. As a civil engineer, you could be responsible for creating crucial and tangible improvements. Think designing and constructing safe water supply systems, or managing gas, bridges, roads and transport systems.

When you graduate with a Charles Sturt engineering degree, you'll be ready to make your mark – both in your chosen field and your community.

Our 5 key points of distinction



Students Josh, Brianna and Emmeline prepare concrete for testing with Principal Engineer in Residence Peter Thew

A new chapter in engineering education

Our courses are designed to keep you ahead of the curve in engineering and innovation. Working in close consultation with our partners and industry advisory committee, we've developed a unique program. One that builds in practical experience and specialist skills. So you can graduate with a strong headstart towards becoming chartered – essential for professional engineers.

1. Get paid while you study and graduate job-ready

We have the only engineering course where four years of year-long work placements count towards your uni subjects. These paid, hands-on experiences give you a head start in your career – you'll graduate sooner, with loads of paid experience.

Did you know? On average, students in our combined Bachelor/Masters program will earn over \$200,000 on placements before they graduate.

2. Practical and affordable study

We understand you'll need to fit work around your on-campus study. That's why each three month semester is followed by a large break to give you time to work.

Thinking about housing options? Our affordable campus accommodation is guaranteed for all first year students.

Plus you could grab one of our Transgrid Civil Engineering Scholarships. We're giving out 25 of these scholarships every year until 2026, valued at \$20,000 each.

3. Flexibility

Our innovative curriculum gives you the flexibility to study what you need, when you need it. You can customise your degree by choosing from more than 1,000 subjects within our unique Topic Tree, each of which are bite-size pieces of study.

Our courses have no exams because each topic contains a mini-assessments. The topics build on each other to extend your learning.

4. Inclusive engineering

We know engineering is a discipline that only gets stronger when we work together. That's why we're focused on human-centred engineering and inclusive opportunities for our student engineers to explore authentic problems. You'll learn and work alongside a diverse cohort, including female industry experts.

5. Study with experts

Charles Sturt Engineering is recognised as a global leader in engineering education. A 2018 global engineering education study, commissioned by Massachusetts Institute of Technology (MIT) rated us the number one emerging educational leader in Australia. You'll be taught by industry experts and will gain the skills and knowledge to excel in your career.

Get a head start on your degree

You can start studying engineering at Charles Sturt right now. For free! We have subjects from our Topic Tree available online to start now with no entry requirements. Each subject will take you around three hours to complete.

Visit csu.edu.au/engineering/curriculum to find out more.



Create your own path

Your experience at Charles Sturt Engineering will be like no other. Workshops instead of lectures. Projects instead of exams. Our Topic Tree instead of semester-long subjects. Paid work placement blocks. So you'll graduate with skills and experience that set you apart.

Choose your course

Bachelor of Engineering (Civil) (Honours)

This degree is designed around problem-based learning and involves flexible micro-subjects. You can choose these to suit your projects. You'll begin your study with three semesters at our state-of-the-art facilities on our Bathurst campus. Then you'll work in a paid placement for a year, gaining practical experience before returning to campus for the final three semesters to complete your studies.

Bachelor of Technology (Civil) / Master of Engineering (Civil)

You'll start your engineering journey with three semesters on campus at our purpose-built, award-winning facility. Our problem-based curriculum will see you complete a sequence of three semester-long projects, each addressing real-world engineering issues.

You'll then undertake four one-year paid work placements as a cadet engineer. You can select and apply for host organisations or you can find your own anywhere in Australia. You'll live and breathe engineering for those four years: one day dedicated to study, four days on the job.

You'll build a portfolio of real-world projects completed throughout your placements, including two thesis projects that address real world issues.

Master of Engineering (Civil)

Already working in the industry but need to update your qualifications? This one is for you.

Upskill and work your way towards becoming a fully registered Australian engineer. You'll build a portfolio of projects while undertaking workplace learning for a host organisation, or continuing to work with your current employer. You'll also study our Topic Tree online, building on your existing knowledge.

Did you know?

100% of our graduates have gained engineering employment in their chosen field immediately after graduation.

Climbing the Topic Tree

Our Topic Tree, available to view at csu.edu.au/engineering/curriculum, is the core of our engineering curriculum. Containing around 1,000 topics averaging three hours in length, the Topic Tree covers a range of specialities within civil engineering.

You'll complete subject branches on the tree with interconnecting topics within each branch. The completion of your first topics (during phase 1 of the course) will ensure you're ready for work as a cadet engineer on your paid placement.

Customise your degree by choosing from over 1,000 topics within our unique engineering Topic Tree.

Supported placements

Charles Sturt Engineering will ensure your host organisation understands its responsibilities and obligations towards you and your progression. Your host organisation will be committed to your success, mentoring you during your time with them.

A graduate like no other

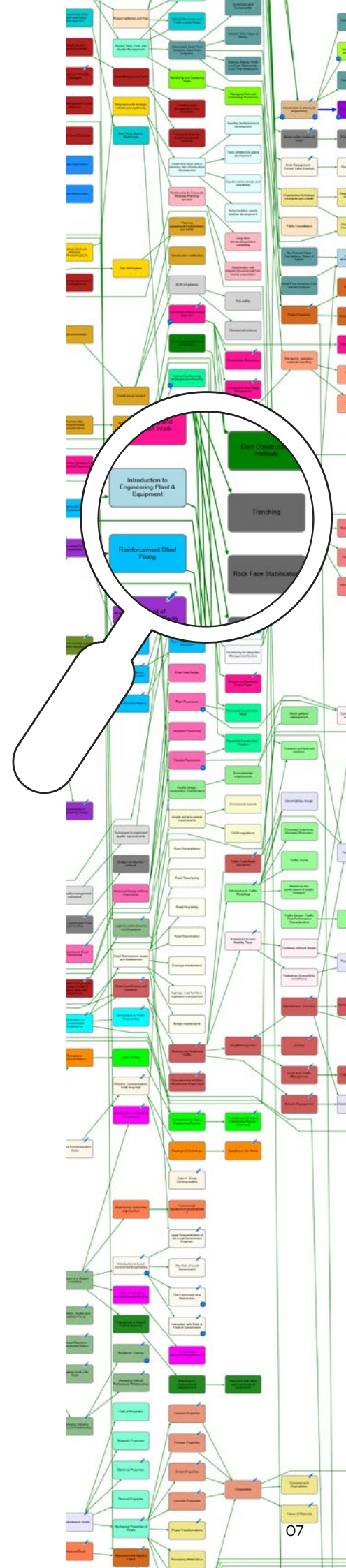
At the end of your time with Charles Sturt Engineering, you'll graduate as an engineer like no other. Unique, innovative, agile and experienced. You'll already have the contacts and experience you need to walk straight into an engineering job, with a head start towards becoming chartered.

Exclusive scholarships

We have \$20,000 to give out to 25 students starting study each year through our Transgrid Civil Engineering Scholarships. They're available until 2026 and the money can be spent however it's needed – whether to cover study costs, living expenses or learning resources.

Apply now

→ csu.edu.au/engineering/transgrid-scholarship



Bachelor of Engineering (Civil) (Honours)

Four years' full-time study

Leaving school, or already graduated?
This degree is perfect for you to begin your engineering career. You can also transfer to the combined Bachelor/Masters program program.

	Problem-based learning pillar	Professional development pillar	Topic Tree pillar
Phase one	Engineering Challenge 0 (ENG160) – 2pt		
	Engineering Challenge 1 (ENG161) 14pt		Topic Tree – Introductory (ENG171)–2 pt
	Engineering Challenge 2 (ENG162) – 14 pt	Performance Planning & Review Student Engineer (ENG181) 4pt	Topic Tree – Student Engineer (ENG173) 36 pt
Engineering Challenge 3 (ENG261) 14pt			
↓			
Phase two	Engineering Portfolio – Junior Cadet (ENG290) 28 pt	Performance Planning & Review – Junior Cadet (ENG281) 6pt	Topic Tree – Junior Cadet Engineer (ENG273) 24 pt
1st paid work placement – Junior Cadet			
↓			
Phase three	Engineering Challenge 4 (ENG362) 14 pt	Elective Subject 8pt	Topic Tree – Bachelor of Engineering 1 (ENG375) 24 pt
Face to Face – Senior Student Engineer	Bachelor of Engineering Capstone Thesis (ENG498) 28 pt	Performance Planning & Review – Bachelor of Engineering (ENG482) 4pt	Topic Tree – Bachelor of Engineering 2 (ENG475) 24 pt

Charles Sturt University courses may be subject to change. For up-to-date course information, please visit study.csu.edu.au/courses

Bachelor of Technology (Civil) / Master of Engineering (Civil)

Five and a half years' full-time study

Mature age student? This degree is perfect for you. It will be less than 16 months before you're back earning a full-time salary.

Leaving school? This degree will maximise your practical experience and qualifications.

	Problem-based learning pillar	Professional development pillar	Topic Tree pillar
Phase one	Engineering Challenge O (ENG160) – 2pt		
Face to Face – Student Engineer	Engineering Challenge 1 (ENG161) 14pt	Performance Planning & Review Student Engineer (ENG181) 4pt	Topic Tree – Introductory (ENG171) 12 pt
	Engineering Challenge 2 (ENG162) 14 pt		Topic Tree – Student Engineer (ENG173) 36 pt
	Engineering Challenge 3 (ENG261) 14pt		
↓			
Phase two	Engineering Portfolio – Junior Cadet (ENG290) 28 pt	Performance Planning & Review – Junior Cadet (ENG281) 6pt	Topic Tree – Junior Cadet Engineer (ENG273) 24 pt
1st paid work placement – Junior Cadet			
↓			
Phase three	Engineering Cornerstone Thesis (ENG398) 24 pt	Performance Planning & Review – Intermediate Cadet (ENG381) 6pt	Topic Tree – Intermediate Cadet Engineer (ENG373) 24 pt
2nd paid work placement – Intermediate Cadet			
↓			
Phase four	Engineering Portfolio – Senior Cadet (ENG490) 28 pt	Performance Planning & Review – Senior Cadet (ENG 481) 6 pt	Topic Tree – Senior Cadet Engineer (ENG473) 24 pt
3rd paid work placement – Senior Cadet			
↓			
Phase five	Engineering Capstone Thesis (ENG598) 32 pt	Performance Planning & Review – Professional Cadet (ENG581) 4pt	Advanced Topics in Civil Engineering (ENG573) 16pt
4th paid work placement – Professional Cadet		Engineering Portfolio – Professional (ENG592) 2 pt	

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Master of Engineering (Civil)

Two and a half years' study


Already working in the engineering field?

Or have a related degree and want to transfer into engineering? This degree is for you.

To enrol you'll need a previous tertiary qualification in engineering or equivalent experience.

	Problem-based learning pillar	Professional development pillar	Topic Tree pillar
Phase one	Engineering Challenge 5 (Eng461) 8pt		Topic Tree - Conversion Masters (ENG474) 8 pt
↓			
Phase two Senior Cadet Placement	Engineering Portfolio - Senior Cadet (ENG490) 28 pt	Performance Planning & Review - Senior Cadet (ENG481) 6pt	Topic Tree - Senior Cadet Engineer (ENG473) 24 pt
↓			
Phase three Professional Cadet Placement	Engineering Capstone Thesis (ENG598) 32 pt	Performance Planning & Review - Professional Engineer (ENG581) 4pt Engineering Portfolio - Professional (ENG592) 2 pt	Advanced Topics in Civil Engineering (ENG573) 16pt

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Where will your journey take you?

Kevin Win, the first graduate of our combined Bachelor of Technology (Civil) / Master of Engineering (Civil)

As a Charles Sturt Engineering graduate, the world will be yours for the making. Through your study and work placements, you may have already found your place or you may choose to work towards developing your specialisation. Here are just some of the career paths you could choose.

Civil engineer

Civil engineers help shape the structures and projects we see around us every day. These critical pieces of infrastructure may include roads and bridges, buildings, gas and water supply, sewerage systems or transport such as railways and airports. As a civil engineer, you'll be looking at materials to best meet human-centred design aims and specifications. You'll also be considering project challenges such as safety, economic and environmental impacts.

Environmental engineer

Environmental engineers streamline how we interact with the world around us. They consider water treatment, pollution control and how to design and build structures in sustainable ways to protect our communities' health and wellbeing, as well as that of the world around us.

Geotechnical engineer

Geotechnical engineering is a specialist area of civil engineering primarily involved with the engineering behaviour of earth and rock materials, often as the first step in the investigation and design of civil projects. The principles of soil and rock mechanics determine the relevant engineering, mechanical and chemical properties of earth materials to facilitate analysis and design of foundations, tunnels, excavations, slopes, pavements, water retention and other earth structures.

Structural engineer

Structural engineers focus on ensuring structures are built to withstand natural and man-made pressures, such as wind, waves and earthquakes or vehicular or human traffic. Structural engineering can be experimental, investigating innovative solutions for construction, and often working alongside engineers in other disciplines, such as mechanical or electrical engineering.

Water engineer

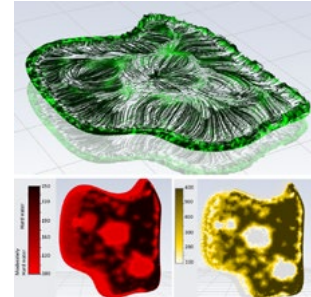
Water engineers, or hydraulic engineers, design and implement infrastructure and systems for water delivery, storm water management, waste and water treatment, water quality management, flood mitigation, controlling watercourses and protecting coastal environments. Their role is becoming increasingly important as we face the challenges of climate change. Workplaces include design consultancies, government agencies, local councils and organisations supporting developing nations.

Making a difference

Charles Sturt cadet engineers contribute to their communities every day. Here are just a few recent projects they've been involved in.

Investigation of recycled water reuse, through artificial groundwater recharge in Bungendore NSW

This project sought to improve future drought resilience in regional areas by using groundwater to boost water supplies. Recharging groundwater with recycled water was investigated, using analysis and computational fluid dynamics modelling.



Integration of permeable pavement in roads in order to reduce ponding stormwater, after rain events in Newcastle

Investigated the use of permeable pavements, which allow water drainage, on road shoulders. The aim was to reduce puddles and improve the safety and convenience of road users and pedestrians.

Design of landslide remediation for Newee Creek, NSW mid-north coast

Structural and geotechnical design of a 120m long, driven pile-soil retaining structure. The aim was to repair damage from a landslide, as well as to prevent future slips to protect local houses and roads. The area had multiple previous episodes of slope instability that were an increasing threat to infrastructure.

Design of new culvert, including catchment analysis, to reduce flooding in Dungog township

Design of an expansion to a culvert in Dungog that frequently backed up and caused flooding. This involved measuring catchment areas and calculating likely water flows. To implement the changes to the culvert, additional redesign of the crash barriers along the road and a small footbridge crossing the channel were needed.

Design of flatpack modular concrete water tanks

The aim of this project was to combine the benefits of light, easily delivered plastic water tanks, with longer-lasting concrete water tanks that involve expensive site work. This resulted in a flat pack, precast concrete water tank. Designed to be light enough to be delivered and set up quickly and easily with minimal site work – but strong and robust enough to provide longevity. The design is modular, so a range of different sizes can be created from common parts, or expanded at a later date.

Frequently asked questions

What is a paid placement?

Paid placements are opportunities for you to work in industry, alongside expert professional civil engineers to build your practical knowledge of engineering in the real-world. Our courses include between one to four one-year placements.

How many hours will I need to complete?

Across one year of work experience, you'll complete 1,500 hours of paid placement. This will be completed as four days a week, around 28 to 30 hours each week.

The Bachelor of Engineering (Civil) course has one-year paid work placement, while the integrated Bachelor of Technology (Civil) / Master of Engineering (Civil) has four years of work placement. Now that's a lot of real-world experience!

Do I have to organise my own placement?

You're welcome to organise your own placement, but we can certainly help you. You can apply to work for a wide range of engineering organisations – both metropolitan and regional businesses through our work-place learning unit.

How will I be paid?

You'll be employed as a cadet engineer by your host organisation. Your salary will depend on your experience.

Visit bjbs.csu.edu.au/workplace-learning/engineering for more information.

How do I balance study and work?

While completing your paid placement, you'll continue to study online which will look something like this:

- working full-time hours across four days a week
- online study for around 15 hours per week.

Do I have to do all of my placements at different organisations?

The choice is yours. You can do all of your placements at different organisations if you'd like, or you can do more than one placement consecutively with the same host organisation. However, we encourage you to have some variety in your placements.

Do I need the highest levels of maths and physics to enrol?

No! Charles Sturt Engineering has no subject prerequisites. It's a myth that engineers need to be intellectuals – well-rounded students from a variety of backgrounds are encouraged to apply. Maths and science principles form the basis of engineering design, but modern engineers also need skills in other areas. Studying subjects like geography, design and technology, agriculture, and any of the sciences are also great preparation.

What areas of engineering will I study?

Our Charles Sturt Engineering Topic Tree is flexible, so you can pick and choose throughout your course which civil engineering specialties you'd like to study. The Topic Tree replaces semester-long subjects with up to 1,000 topics to choose from, that each take around three hours. Our disciplines are structural, geotechnical, environmental, road and transport, construction and water engineering. View the Topic Tree online at csu.edu.au/engineering/curriculum

When can I start studying?

Study starts in late February. Want to get a head start and make the first semester easier? Complete a few topics now for full credit. Find out more at csu.edu.au/engineering/curriculum

How do I apply?

If you're a school leaver, you apply through UAC. Visit uac.edu.au to find out more.

If you're coming to uni after some time in the workforce, you apply directly to Charles Sturt. Visit csu.edu.au/apply to apply.

Is there a minimum ATAR requirement?

Yes, if you're a school leaver. The minimum ATAR required for the integrated Bachelor of Technology / Master of Engineering (Civil) is 80. The entry requirement for Bachelor of Engineering (Civil) (Honours) is an ATAR level of 75. If you live in a regional area we automatically adjust your selection rank by five points.

What are the non-ATAR entry requirements?

If you're a mature-age student or don't have an ATAR there are still ways to enrol. Prior education e.g. trade qualifications, diplomas and pathway courses are also considered, along with previous work experience.

For the Master of Engineering (Civil), applicants need to have a minimum Bachelor of Engineering Technology degree with relevant work experience.

Are there any scholarships I can apply for?

You can tap into more than \$5 million in scholarships and grants. These include scholarships for engineering students. Visit study.csu.edu.au/scholarships to find out more.

Plus you can apply for one of our exclusive Transgrid Civil Engineering Scholarships. We've got 25 available every year until 2026, valued at \$20,000 each.

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