

CAREERS WITH STEM™ JOB KIT



MECHANICAL ENGINEER

Design, create and improve the machines
and systems that power our world

SUPPORTED BY



UNSW
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UNSW Engineering

School of Mechanical and Manufacturing Engineering



UNSW
SYDNEY

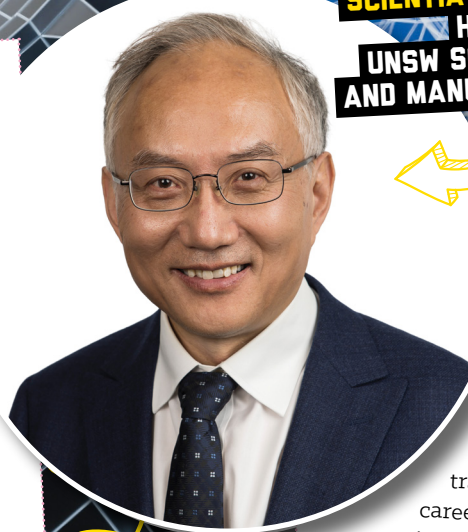
MACHINE DREAM

Make an impact with mechanical engineering



FIND OUT MORE
HERE OR SCAN

SCIENTIA PROFESSOR CHUN WANG
HEAD OF SCHOOL
UNSW SCHOOL OF MECHANICAL
AND MANUFACTURING ENGINEERING



Mechanical engineering is critical to Australia's health, wealth, prosperity and long-term sustainability. From transportation and energy to healthcare and manufacturing, mechanical engineers drive our economy and improve our quality of life by creating, building and maintaining ingenious machines, tools and complex systems that keep our world moving.

Mechanical engineering is all about making things work efficiently, reliably and sustainably, whether that's building a simple mechanism or engineering complex robotic systems.

As a mechanical engineer, you're vital to a vast range of industries: you could design autonomous robots for advanced manufacturing, make heating and cooling systems for buildings, manage a city's water infrastructure to ensure clean supply, create wind turbines to power communities, or invent breakthrough products that improve lives around the world.

The best mechanical engineers are curious, analytical and creative. They are driven by a desire to understand how things work and how to make them better. They're creative thinkers who harness human ingenuity and the power of generative AI.

We need engineers who can imagine what doesn't yet exist and bring it to life. That means inventing new designs, pioneering new systems and designing solutions for global challenges.

Smart and efficient

If you love designing, tinkering, building and improving machines and systems, I highly recommend you take a look at UNSW's Bachelor

of Engineering (Honours) in Mechanical Engineering.

At UNSW, our mechanical engineering program equips students with not only in-demand skills for first jobs but also enduring and transferrable skills for future careers. Students will integrate

engineering domain knowledge with critical and creative thinking through collaborative teamwork and real-life projects.

We are deeply connected with industry, providing outstanding opportunities to our students, such as internships, industry-led projects and spinning out new companies. We're focused on setting students up to be successful throughout their career, not just in their first job.

From robotics and transport to space exploration and manufacturing, mechanical engineers work at the forefront of innovation, solving real-world problems and shaping the future. Why don't you join us?

Scientia Professor Chun Wang
Head of School
UNSW School of Mechanical and
Manufacturing Engineering

**ALL THE ESSENTIAL ELEMENTS
OF MAKING A BETTER LIFE REQUIRE
MECHANICAL ENGINEERS."**

Check out CareerswithSTEM.com for more insights, information, inspiration and advice about mechanical engineering careers!

Cleaner, smarter, faster

Shape the systems that keep our world moving

Mechanical engineers are in demand in exciting fields like renewable energy, smart buildings, high-tech manufacturing and medical technology. Whether it's making aircraft more cost-effective, designing safer transport systems or creating autonomous technologies, mechanical engineers work across industries like robotics, automotive, energy, construction and manufacturing.

PICK A PATH

Mechanical engineering is a broad field. You could secure jobs like:

AUTOMOTIVE ENGINEER: design and test next-gen electric vehicles

ROBOTICS ENGINEER: develop machines that can help make life better

BIOMECHANICAL ENGINEER: create prosthetic limbs, implants and mechanical medical devices

ENERGY SYSTEMS ENGINEER: work on clean energy tech like wind, solar and beyond

MANUFACTURING ENGINEER: make essential products more efficiently and sustainably

HVAC (HEATING, VENTILATION AND AIR CONDITIONING) ENGINEER: design heating, ventilation and cooling systems

Simply the best

UNSW's engineering faculty consistently ranks as the best in Australia. You'll get hands-on experience, access to global research, industry placements and flexible double degree options.

WHERE TO WORK?

Recent UNSW grads have found roles at:

MicroTau
advanced materials and manufacturing

Hydro Tasmania
renewable energy

OCIUS
autonomous maritime systems

Saber astronautics
space systems

Cochlear
medical devices

Precise Air
HVAC and building services

How much?

In Australia, mechanical engineers earn around **\$115,000** a year.

Source: Seek.com,
Talent.com

FUTURE YOU

Mechanical engineering is at the forefront of change. You could find yourself working to:

- Build autonomous vehicles
- Design green energy systems to combat climate change
- Create robotic assistants for hospitals and households
- Develop space habitats and life-support for future astronauts
- Invent smart prosthetics that operate like real limbs



Can't decide?

If you're practical and like the sound of engineering, choosing mechanical engineering is an excellent option. When you study mechanical engineering, you have the chance to dream broadly: Will you specialise in aerospace? Create new vehicles? Dive into sound equipment? Create a handy robot? Change the way we use energy? Choose mechanical engineering and take the time you need to explore – and discover the career you're most passionate about.

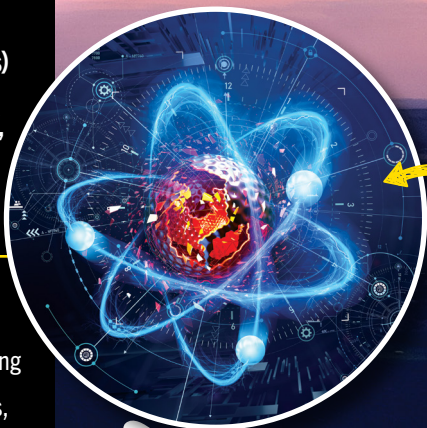
DEGREE SNAPSHOT

Choose a **Bachelor of Engineering (Honours) in Mechanical Engineering at UNSW**, and you'll get skills, experience and qualifications in:

Year 1: Engineering design, maths, physics, mechanics and computing

Year 2: Solid mechanics, fluid mechanics and thermodynamics

Year 3 and beyond: Advanced solid mechanics, thermofluids, mechanical design and more, plus get involved with opportunities like the Challeng project.



WHAT DOES IT TAKE?

You could be a great mechanical engineer if you:

- ✓ Love physics and maths
- ✓ Like to build and tinker
- ✓ Are hands-on and happy to test, fix and try again
- ✓ Have a knack for creative problem-solving
- ✓ Are curious about how things work

WHAT DO MECHANICAL ENGINEERS DO?

- ✓ Design and test engines that power vehicles, aircraft and machines of every kind
- ✓ Build robots for factories, hospitals, deep-sea exploration and even space missions
- ✓ Develop renewable energy systems such as wind turbines, solar trackers and wave-energy devices
- ✓ Advance medical technology with innovations in prosthetics, surgical tools and assistive devices
- ✓ Engineer advanced systems for comfort and sustainability, from skyscraper climate control to next-generation submarines and aircraft

SCHOLARSHIPS TO WATCH

- UNSW WOMEN IN ENGINEERING SCHOLARSHIP
- UNSW ENGINEERING RURAL SCHOLARSHIP

FIND OUT MORE AT [SCHOLARSHIPS.UNSW.EDU.AU](https://scholarships.unsw.edu.au) OR SCAN

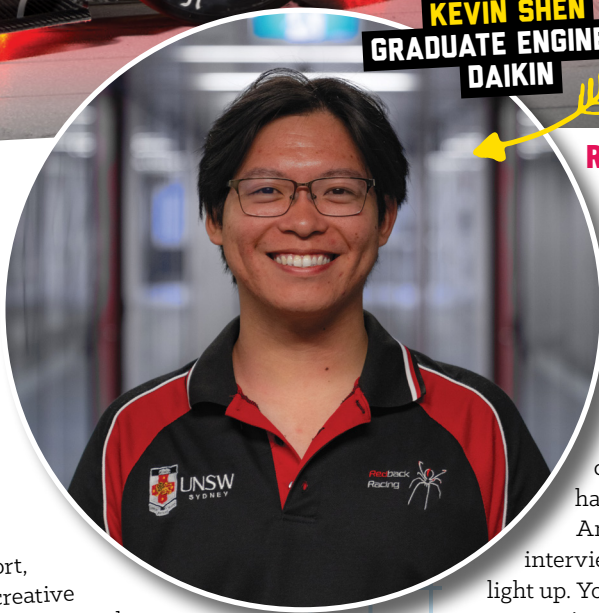


RACING AHEAD

KEVIN SHEN CREDITS HIS TIME AT UNSW WITH DISCOVERING HIS PASSION



KEVIN SHEN
GRADUATE ENGINEER,
DAIKIN



Redback racer

In 2024, Kevin was made Redback Racing's mechanical technical director. "I don't know when's the next time I'm going to be co-leading a team of 120 students to build a race car in a year," he laughs. "I've made so many friends. I've learned so much about engineering, but also about communication and teamwork. It has definitely been the highlight."

And employers seem to agree. "In job interviews, you can see the interviewer light up. You can show you have developed competencies that are not represented by grades."

Kevin's already lined up a new job with the R&D team at Australian aircon company Daikin. "There are so many exciting opportunities. I get to give my input in design and manufacturing and maximise my potential."

If you're still trying to find your passion, Kevin's advice is to stay open. "I discovered that instead of focusing on the context of the work, like racing, it's better to think: what is it about the work itself that intrinsically interests you?"

I REALLY LIKE THE CREATIVE ASPECT OF MECHANICAL ENGINEERING AND I FOUND THAT REALLY SURPRISING."

Co-lead a team of 120 engineers. Design, build and race a car. Score a dream job before you've even finished your degree.

These are just some of Kevin Shen's big moments as part of his Bachelor of Engineering (Honours) in Mechanical Engineering at UNSW.

A keen Formula One fan, Kevin loves motorsport, road cycling and getting creative with mechanics. "I like tinkering with bicycles. Currently in my garage, I have four bikes, and I just bought a used car."

Although Kevin started his degree with a major in aerospace engineering, he switched to mechanical in his second year after getting involved in Redback Racing, UNSW's student-led motorsport team.

"As a new member, I was fabricating metal components, bending things, breaking things," he says. "Then in 2022 and 2023, I moved into suspension design, and that's what has driven my interest in mechanical engineering. I discovered that there was so much more you could do in mechanical systems that is very creative."

GRADUATE ENGINEER,
DAIKIN

BACHELOR OF ENGINEERING (HONOURS),
UNSW
(MECHANICAL ENGINEERING)

IMAGES: SUPPLIED

Build your own adventure

Elena Aruldooss manufactured her dream engineering career



ELENA ARULDOOSS
MECHANICAL AND AUTOMATION
ENGINEER RØDE

**I'VE ALWAYS BELIEVED
IN A HOLISTIC LEARNING
EXPERIENCE, AS IT EQUIPS YOU
TO CONNECT BIG IDEAS AND
UNCOVER DEEPER INSIGHTS."**

For UNSW Bachelor of Engineering (Mechanical and Manufacturing) graduate Elena, uni was so much more than lectures and lab work. Her time on campus was full of invaluable, hands-on learning experiences with the student-led solar car project, Sunswift, up there as a highlight. "It allowed me to understand the full engineering workflow, from the initial ideation to physically building and implementing what I'd designed," she says. "It gave me a solid grounding in the principles I now apply in my role."

Elena even credits the experience to helping her land her first grad gig, an engineering cadetship at audio tech manufacturers RØDE Microphones. "Sunswift was instrumental," she stresses. "But my part-time job as a gym receptionist helped too. It taught me how to communicate and show my personality in interviews."

Now working as a mechanical/automation engineer in RØDE's production sustaining engineering team, Elena loves that no day – or week – is ever the same. She spends her time mixing it up between design and problem-solving.

"Some days I'm at my desk using CAD [computer-aided design] software to design a mechanical jig, and others I'm on the assembly floor collecting data or doing maintenance."

And her advice to young undergrads keen to get into mechanical engineering? Get hands-on early and volunteer for all the extra stuff. "Do internships, join student-led projects or work on your own passion builds," she says. "It prepares you to contribute meaningfully from day one and shows employers your passion".

Day in the life 8am

Arrive at work in time for our stand-up team meeting – coffees essential.

9am

Collect data and insights from production lines.



11am

Update and release required process changes based on the data collected.

12

Lunch

1pm

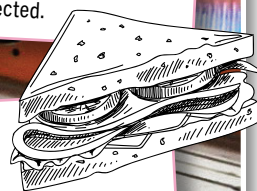
Standby support for production through routine maintenance of systems.

2pm

Back to my desk to CAD a mechanical jig for a heat press process for a new product.

5pm

Time to head home.



Get the job!

Start your engine!

Study

If you're keen on **mechanical engineering**, make sure you focus on **maths, physics, IT, and design technology** at high school.

WATCH

Pacific Rim (2013)

Giant mechanical robots are humanity's last hope in this sci-fi action adventure.

Apollo 13 (1995)

Based on the true story of a real-life engineering crisis solved with creativity, teamwork and ingenuity.

Ford v Ferrari (2019)

Follow engineers and drivers at Le Mans in the 1960s for a showcase of mechanical problem-solving under extreme pressure.

EXPLORE

Chain reaction Rube Goldberg machine (YouTube)

Watch this intensely satisfying, world-record breaking display of mechanical engineering in action thanks to Guinness World Records.

GET INVOLVED

Join the **Young Women in Engineering Club** and check out some engineering challenges.

Take apart and reassemble something mechanical: an old bike, a toy or even an old appliance.

Enter the **Warman Design and Build Competition** and develop practical solutions to theoretical problems to win big.

PLAN

It's never too early to plan your dream career. Check out the **latest mechanical engineering jobs** around the world.

FOLLOW

• Follow **UNSW Redback Racing** on Facebook

• Check out some of mechanical engineer Victor Li's videos at **@EngineeringGoneWild**

GAME

Besiege

Design and test medieval machines with physics-based destruction.

Automation – The Car Company Tycoon Game

Design cars from the engine up: mechanics, performance, aerodynamics and more.

Kerbal Space Program

Build rockets, launch missions and learn orbital mechanics.

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