

Robotic and Mechatronic Engineering Specialisation

First Year Study Pathways and Information Guide



What is Robotic and Mechatronic Engineering?

Robotic and Mechatronic Engineering combines mechanical engineering, electronics, control systems, software, and artificial intelligence to create the intelligent machines and automated systems that are transforming our world

From autonomous vehicles and agricultural robots to advanced manufacturing systems, medical devices, and mining automation, robotic and mechatronic engineers work at the intersection of multiple disciplines to solve complex real-world problems.

This specialisation will equip you with the skills to design, build, program, and integrate robotic and autonomous systems. You will develop expertise in sensors and actuators, embedded systems, robotics, control engineering, machine vision, autonomous navigation, and intelligent decision-making, while gaining hands-on experience through practical laboratories and industry-focused design projects.

A distinctive feature of the program is its strong emphasis on systems integration, ensuring graduates can bring together mechanical, electrical, and software components into complete engineering solutions. Graduates will be well prepared for careers across robotics, automation, advanced manufacturing, mining, agriculture, logistics, healthcare, defence, and emerging technology sectors.

Robotic and Mechatronic Engineering is suited to students who enjoy working across traditional engineering boundaries rather than focusing on a single discipline

You will learn to think like a systems engineer, understanding how mechanical components, electronics, software, sensors, and people interact to create complex products and technologies.

Students in this specialisation are often curious about emerging technologies and enjoy both analytical problem-solving and practical, hands-on work. You may find yourself designing a solution in software one day, testing electromechanical hardware in a laboratory the next, and then working with a multidisciplinary team to bring the complete system together.

The specialisation develops adaptability, creativity, and systems thinking, preparing graduates to work in rapidly evolving industries where innovation and integration are just as important as technical expertise.

What You'll Experience

If you enjoy understanding how things work and want to create intelligent machines that interact with the real world, Robotic and Mechatronic Engineering could be the specialisation for you

Throughout the program, you will learn by combining mechanical engineering, electronics, computing, control systems, and artificial intelligence to solve practical engineering challenges. Students design and build robotic systems, program embedded devices, work with sensors and actuators, develop autonomous navigation and perception systems, and integrate hardware and software into complete solutions.

The specialisation emphasises hands-on learning through laboratories, design projects, and real-world systems integration. You will gain experience with the tools and technologies used in modern robotics and automation industries, while developing strong problem-solving, teamwork, and communication skills

This is an ideal choice for students who enjoy mathematics, physics, coding, mechanics, electronics, and creative design, and who want to help shape the future of automation, robotics, and intelligent systems.

First Year

Core Courses



Second Year

You MUST declare your specialisation at the start



Third Year

If you're choosing one, start taking your majors courses



Fourth year +

Your major must be declared now, Advanced courses, thesis, capstone etc



Your Final Year

In your final year, you will have the opportunity to bring together everything you have learned through a major engineering project, tackling a real-world challenge in robotics, automation, or intelligent systems

You may also choose advanced studies in areas such as autonomous systems, human-robot interaction, advanced control, or robotic manipulation, while working closely with industry or research partners.

The final year is your chance to develop a professional portfolio, gain valuable industry experience, and demonstrate the systems integration skills that employers value highly in robotic and mechatronic engineers.

As robotics and automation continue to grow in importance, this specialisation positions you to contribute to the technologies shaping the future.

After You Graduate

Robotic and Mechatronic Engineering graduates are entering one of Australia's fastest-growing technology sectors

The Australian robotics market is projected to grow from USD 1.5 billion in 2024 to USD 6.7 billion by 2033, driven by increasing adoption of automation across manufacturing, mining, agriculture, healthcare, logistics, and other industries. This growth is creating strong demand for engineers who can develop, integrate, and manage intelligent systems.

Graduates may pursue careers as robotics engineers, automation engineers, control systems engineers, autonomous systems engineers, software developers, or systems integration engineers. Their work could involve designing autonomous vehicles, programming industrial robots, developing smart products, or deploying large-scale automated systems.

The broad combination of mechanical, electrical, and software engineering skills developed in this specialisation provides excellent career flexibility and positions graduates to help shape the future of automation and intelligent technology.

The 2026 Average Annual Salary for Robotic and Mechatronic Engineers is between:

\$130K-\$140K

seek.com.au



Graduate Spotlight

Vedant Bhandari – Machine Algorithms Engineer, Komatsu Mining

When Vedant Bhandari began studying Mechatronic Engineering at UQ, he was fascinated by intelligent machines and the challenge of making autonomous systems operate safely in complex real-world environments. After completing his Bachelor of Engineering (Honours) in 2022, he continued his studies through a PhD focused on situational awareness for autonomous surface mining machines using point cloud data. His research explored how robotic systems can interpret information from sensors such as LiDAR and transform it into a meaningful understanding of their surroundings, a critical capability for autonomous vehicles operating in dynamic environments.

Throughout his studies, Vedant developed expertise across robotics, perception systems, software engineering, data processing, control systems, and field robotics. His work combined theory with practical deployment, requiring him to solve challenging problems at the intersection of sensing, artificial intelligence, and autonomous decision-making. Today, Vedant applies these skills as a Machine Algorithms Engineer at Komatsu Mining, one of the world's leading mining technology companies. In this role, he works on advanced algorithms that support autonomous mining equipment, helping improve safety, productivity, and operational efficiency in large-scale mining operations.

Vedant's journey demonstrates the breadth of opportunities available to graduates in robotic and mechatronic engineering. From undergraduate projects through to industry-leading research and professional practice, the specialisation provides a pathway to careers developing the intelligent machines and autonomous systems that are transforming industries around the world.

"For me, the best part of the Mechatronics program was control systems, which put to use the knowledge from electrical and mechanical courses towards the goal of getting a system/robot to actually do what you want it to do, preferably at a superhuman level."

Thomas Dickson
Graduate,
Bachelor of Engineering (Honours)
(Mechatronic Engineering) /
Bachelor of Computer Science

Find Your Community

UQ has 200+ clubs and societies, including groups connected to Robotic and Mechatronic Engineering

Student clubs and societies provide a voice for the student community and bring students together through networking and social events. They also provide valuable opportunities to engage with industry, enhance your leadership skills and make long-lasting friendships.

Student societies related to Robotic and Mechatronic Engineering include:

- UQMARS - UQ Mechatronics and Robotics Society
- EBESS - Electrically Based Engineering Student Society
- UQLIT - UQ Ladies in Technology
- UQRL - UQ Reality Labs

Robotic and Mechatronic Engineering related student clubs include:

- UQ Space: The UQ Space robot rover is world #1 at the Australian Rover Challenge!
- UQ Racing: Top ranked team in Australia, and 11th out of over 400 teams globally

Robotic and Mechatronic Engineering Study Pathways

You can tailor Robotic and Mechatronic Engineering towards your interests through majors and minors

Majors Include:

- No Major
- Computer Engineering Major
- Mining Engineering Major

Minors Include:

- Artificial Intelligence Minor
- Computing Minor
- Data Science Minor
- Design Minor

Robotic and Mechatronic Engineering Study Plans

Here are the resources available to help you plan your degree

There is a specific order that we recommend you take your courses in. These study plans are designed to ensure that you meet your prerequisites and can take the courses in the semester that they are offered.



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<https://www.eait.uq.edu.au/study-plans/undergraduate/robotic-and-mechatronic-engineering>