

College of STEM Strategy

2026-2030



Ngala kwop biddi.
Building a brighter future, together.



Acknowledgement of Country

We acknowledge that Murdoch University is situated on the lands of the Whadjuk and Binjareb Noongar people. We pay our respects to their enduring and dynamic culture and the leadership of Noongar elders past and present.

The boodjar (country) on which Murdoch University is located has for thousands of years been a place of learning. We at Murdoch University are proud to continue this long tradition.

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Introduction

We stand at an interesting juncture as we cross into the second quarter of the 21st century. Society today is immersed with innovations and opportunities that were inconceivable only a few years ago, largely driven by advancements in technology such as autonomous systems, artificial intelligence, renewable energy generation and storage, and personalised medicine.

With opportunities come challenges. The most salient to an educator remains how we can best prepare the next generation to exploit opportunities and solve challenges that will lie beyond our comprehension today, in a world that is increasingly accelerating and changing.

Working with my leadership team, I am pleased to present the College of STEM strategy. Our collective vision by 2030 to this end is for the three Schools that comprise the College of STEM, Engineering and Energy (E&E), Information Technology (IT), and Maths, Science, Chemistry & Physics (MSCP)...

...to be recognised for excellence in inclusive STEM education and research that prepares future innovators to deliver real-world solutions for a sustainable and technologically advanced future.



Murdoch University has always been an institution guided by a strong ethos of custodianship over environment, social conscience, and equitable access to opportunities – qualities that distinguish our graduates in the eyes of society. My hope with this strategy is that it provides the clarity of purpose to enable our team and collaborators to create experiences and structures that allow our students, graduates, and staff to more effectively interface with the digital world, influence the physical world around us, and grow beyond our conceptions of what is possible today.

I look forward to collaborating across our University and with our external partners to bring this vision to life.

A handwritten signature in black ink that reads "Parisa A. Bahri".

Professor Parisa A. Bahri
Pro Vice Chancellor, College of Science,
Technology, Engineering and Mathematics,
Murdoch University

Our Schools

The College of STEM at Murdoch University consists of three schools.



Engineering & Energy

The School of Engineering and Energy is a multidisciplinary school with a dedicated group of researchers, educators, and specialists working to solve complex engineering and energy problems who challenge conventional thinking and value creativity and imagination.

We teach a range of modern and industry-relevant courses to produce industry-ready graduates who excel in the modern world.

Our courses are designed with industry to equip students with skills that ensure the best possible experience and employment outcomes. We offer courses in specialised areas of Engineering including Electrical and Renewable Energy, Environmental and Sustainability Systems, and Industrial Control and Autonomous Systems.

We also proudly host the longest-running tertiary education program on energy (the Master of Renewable and Sustainable Energy) in Australia: Established in 1992 with over 750 degrees awarded to students from 80 countries.

Our academics are globally renowned in various fields, including electrical power systems control and operation, renewable energy technologies and its integration, industrial control and automation, environmental sustainability, energy modelling, policy and sustainable development systems.

Our state-of-the-art facilities give researchers and students access to the latest technological developments and modern industrial practices needed for a first-class academic experience.





Information Technology

The first quarter of the 21st century has seen astonishing advances in information technology in terms of capability, economic importance and the impact on everyday life. Established in 2023, the School of IT has seen rapid growth, with around 1300 students in Perth, and another 900 at our transnational campuses in Singapore and Dubai.

To support our students in this rapidly changing environment, our School has a strong emphasis on collaboration with industry and being research-informed in our teaching, supported by 38 academic staff and an increasing number of HDR students on the Perth Campus. Relevant programmes are accredited by the

Australian Computer Society and all include work-integrated learning activities with our industry partners and within Murdoch.

We have research clusters in Artificial Intelligence and Computer Vision, Networking and Cybersecurity, Business Information Systems and Extended Reality, Visualisation and Simulation. These groups align with our teaching across the whole range of IT including Computer Science, AI, Internetworking, Cybersecurity, Business Information Systems, Games, and Data Analytics, supported by our facilities including high performance computers, a data centre and virtual reality development spaces.

Mathematics, Statistics, Chemistry & Physics

The disciplines within our School underpin all other sciences, engineering and technology, including data science. This foundational knowledge is sought when tackling new and/or challenging problems, whether it is in industry, research or the environment.

Our staff bring expertise in a wide range of areas and are deeply connected nationally and internationally in their fields and are working with various bodies within the public and private sectors applying this knowledge.

Many critically important (and fascinating) problems sit at the interface between several disciplines (e.g. those in health, sustainability, food security, critical minerals) and it is here that our multidisciplinary school excels.

Students will find a supportive, friendly and modern learning environment. They gain a unique blend of theoretical and practical expertise. Our focus on applications will give you the hands-on experience and problem-solving skills that are highly sought after by employers in a variety of industries, both locally and beyond.

Our approachable staff are always available to answer questions and provide guidance, making your academic journey a positive and memorable experience. It may even be fun. Whether you're looking to pursue a degree in one or more of our fields or combine them with topics from across Murdoch University, we are here to help you succeed.



Our Shared Purpose

To change lives and society for the better through accessible education and research, contributing to the solution of societal and environmental challenges and providing an inclusive, caring community in which everyone can realise their potential.

Sustainability

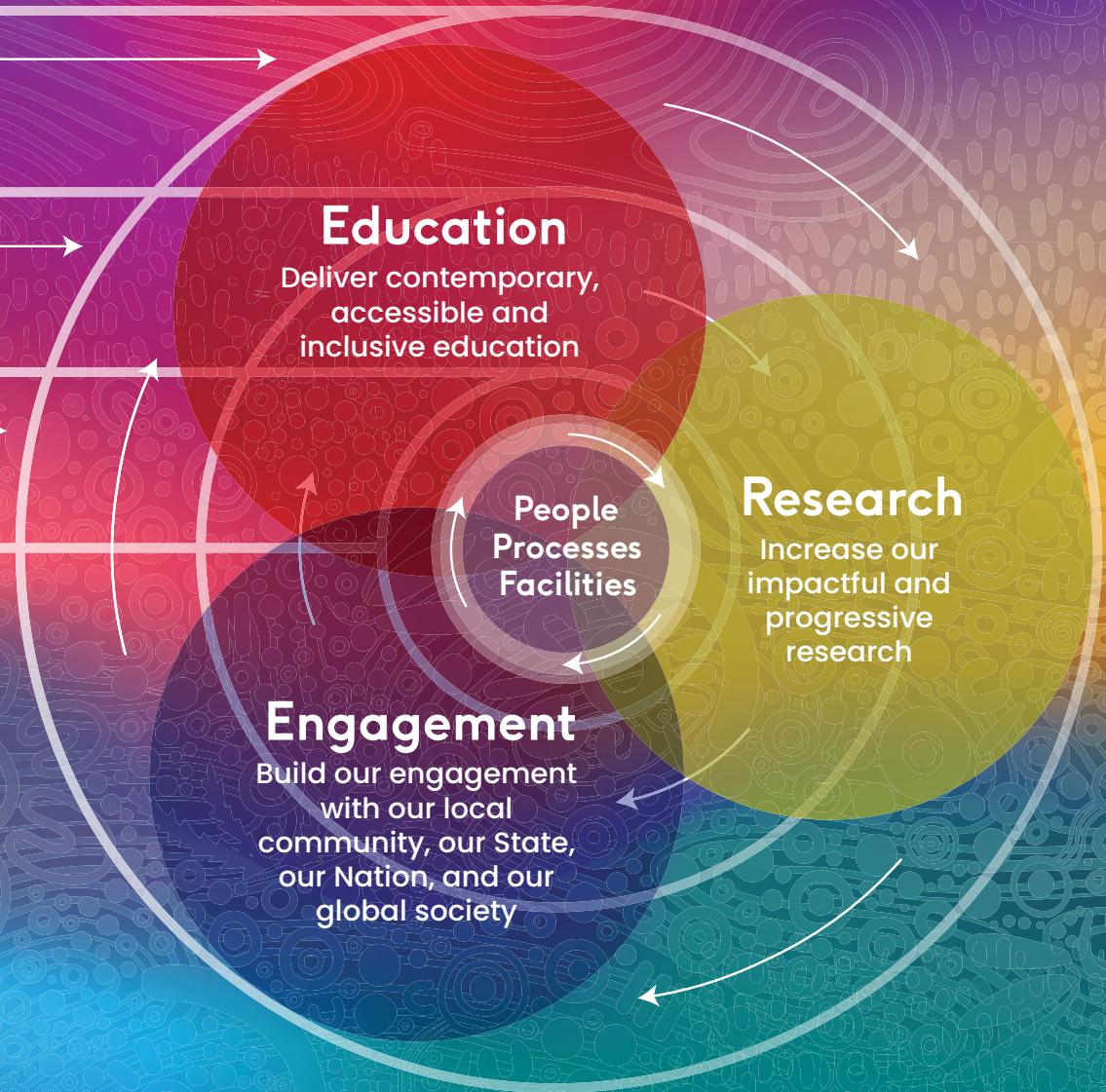
Be a leading university in education, teaching, and translational research in sustainability

Equity, diversity and inclusion

Build a welcoming, diverse and inclusive community

First Nations

Become the University of Choice for First Nations peoples



Education in STEM

To empower STEM students to address global challenges and equip them to be adaptable, team-oriented, and lifelong learners in future workplaces and society.



MU Education

Deliver contemporary, accessible and inclusive education, with a high quality and engaging student experience, producing graduates who are adaptable and have fresh perspectives and a social conscience.



Goal 1.

Improve teaching & staff capability

Enable and support staff to deliver the best educational outcomes for students and champion a culture of continuous improvement in teaching and learning practices.

Focus Areas

1. Ensure our staff are equipped with the knowledge and tools to enhance teaching delivery through holistic training.
2. Explore advancements in teaching technologies and practices from across disciplines and industries, and align teaching and professional development at the College of STEM with best practices.
3. Monitor and ensure staff workload is sustainable, and explore technologies and practices to augment capacity.
4. Deepen the integration between academic, technical, professional and transnational education (TNE) staff as a holistic teaching team, recognising their contributions to the learning experience.
5. Model sustainable behaviours and practices in our College operations.



Education in STEM



MU Education

Deliver contemporary, accessible and inclusive education, with a high quality and engaging student experience, producing graduates who are adaptable and have fresh perspectives and a social conscience.

Goal 2. Relevant & innovative courses

Sustainably expand and grow our education offerings to ensure content is relevant to the needs of society today and for the future.

Focus Areas

1. Embed Sustainability and EDI dimensions, Indigenous Knowledges, and AI capabilities in the design of learning content to help students better contextualise and apply academic learning.
2. Modernise and streamline our course portfolio, guiding us to create new offerings and sunset older courses to match the changing needs of industry and society and the interdisciplinary applicability of STEM.
3. Incorporate the experiential dimension of learning in the design of course content and delivery.
4. Define alternate entry pathways in the design of our courses and degrees to broaden access to STEM knowledge.

Goal 3.

Interactive, real-world learning environments

Provide an active, student-centred learning environment to enhance the depth, breadth and applicability of skills and knowledge to enhance the employability and career development of students in the age of AI.

Focus Areas

- 1.** Explore and identify opportunities within the community and the university for students to apply their knowledge in collaboration with different disciplines to solve real-world problems while they study.
- 2.** Co-design learning experiences with industry (e.g. work integrated learning, industry projects, etc) to reinforce the link between higher education and real-world application.
- 3.** Explore the application of modern technologies (such as artificial intelligence) to enhance the provision and delivery of academic and services support to students.
- 4.** Develop programs and structures to allow students and staff to engage, connect, and collaborate across disciplines.
- 5.** Promote safe practices across all our learning experiences to instil a culture of safety in our graduates before they enter the workforce.

Research in STEM

Increase impactful, high quality research to further advance knowledge and innovation, strengthening our reputation in STEM and beyond.



MU Research

Increase our impactful and progressive research in our areas of strength and excellent research across our disciplines.



Goal 4.

Research capability & culture

Develop our research capability to improve the quality and impact of MU's research, whilst fostering a culture that drives research leadership and excellence.

In accordance with MU's definitions:

ECR: one who is either currently within their first eight years of academic or other research related employment, allowing for uninterrupted and stable research development, following completion of postgraduate research training or currently employed at Senior Lecturer level or below.

MCR: fifteen years post-PhD completion.

Focus Areas

1. Increase our research outputs in the form of high-quality publications and citations in impactful sources.
2. Diversify entry pathways to increase access to, and participation in, STEM research – with particular focus for early career, First Nations, female, and gender-diverse researchers.
3. Grow future research capability by supporting higher degree by research (HDR) students, early career researchers (ECR), mid-career researchers (MCR) and senior academics through initiatives such as scholarships, co-supervision, and mentorship.
4. Create platforms and forums to showcase and raise the visibility of ECR and MCR research with industry and external stakeholders, and to create collaboration and networking opportunities.



Research in STEM



MU Research

Increase our impactful and progressive research in our areas of strength and excellent research across our disciplines.

Goal 5. Research collaboration

Enhance research collaboration between the College of STEM across other disciplines, with industry, and with the community – locally, nationally, and internationally.

Focus Areas

1. Seek and create research collaboration opportunities within MU to harness the complementary strengths across disciplines.
2. Collaborate with industry partners to develop and conduct innovative research projects to solve challenges of the past, present, and future.
3. Build relationships with First Nations communities to explore opportunities and interest in collaborating on research, involving First Nations researchers, and benefitting First Nations communities.
4. Engage and involve community stakeholders in the development of research with direct community outcomes.

Goal 6.

Research Resourcing & Support

Upgrade our existing shared-used equipment and infrastructure, optimising its use and management to support research, and be deliberate in new acquisitions.

Focus Areas

1. Modernise research spaces to improve the research experience for staff and students.
2. Optimise our processes for the acquisition and maintenance of research equipment.
3. Maximise the utility of our facilities and equipment, such as by clarifying procedures to enable its use by our partners.
4. Promote safe practices in our lab spaces and instil a culture of safety.
5. Ensure our research and lab spaces are accessible and equitable.



Engagement in STEM

Increase the visibility of STEM by building and maintaining strong relationships within our communities, strengthening MU's reputation as thought leaders in STEM research and education.



MU Engagement

Build engagement with our local community, our State, our Nation, and our global society, creating mutually beneficial partnerships at all levels.



Goal 7.

Be present

Create interest and awareness in STEM to increase participation in STEM, and be recognised as a preferred partner and problem solver by building capability in the workforce and industry.

Focus Areas

1. Create events, programs, and experiences that promote engagement with STEM fields, and make STEM concepts accessible to new audiences.
2. Demonstrate leadership in events and initiatives with a wider focus, such as National Science Week, to contribute a STEM perspective and boost the College's profile to a wider audience.



Engagement in STEM



MU Engagement

Build engagement with our local community, our State, our Nation, and our global society, creating mutually beneficial partnerships at all levels.

Goal 8. Stay connected

Stay current with community priorities through our students and stay connected to our staff and student alumni to boost the College's presence in society and industry.

Focus Areas

1. Engage and invite our alumni to participate in MU activities to promote knowledge exchange between academia and practice.
2. Build mutually beneficial relationships with industry partners to advance the applicability and impact of research and learning in STEM.

Goal 9.

Drive the conversation

Lead the conversation and be a respected, trusted voice in STEM, influencing leaders and shaping industry practices locally and internationally.

Focus Areas

1. Raise the profile of STEM at MU to a global audience, such as through hosting and participating in international forums.
2. Build a strong presence for MU STEM outside of academia to influence decision-making, such as through participation on advisory groups and engagement with media.
3. Support collaborative research by continuing to build and strengthen relationships with international partner institutions.
4. Strengthen the connections with our transnational campuses to support the delivery of a global experience for our staff and students.





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