Advanced Manufacturing

Future-focused postgraduate programs



Position yourself at the forefront of advanced manufacturing

QUT is now offering new future-focused postgraduate courses in advanced manufacturing, with specialisations in digital and robotic manufacturing, and bioprocess engineering.

Acquire the knowledge to seamlessly incorporate state-of-the-art technologies and contemporary techniques, with a view to optimising operations and nurturing innovation.

The curriculum has been meticulously crafted to cater to industry requirements by empowering students with the skillset necessary to address emerging trends in decarbonisation. This includes a focus on spearheading projects that involve sustainable materials and processes such as biofuels and animal-free food production. Furthermore, students will gain insights into fortifying manufacturing processes with sustainability and resilience strategies, especially in response to disruptions in the supply chain.

This course is tailored for visionary future leaders, whether they are positioned within well-established manufacturing companies or embarking on entrepreneurial ventures within the industry.

Develop dynamic new skills, knowledge and expertise

Digital and robotic manufacturing

- **Advanced materials expertise**
  In-depth understanding of advanced materials, encompassing properties, processing, performance and applications in robust designs.
- **Sustainability and circularity integration**
  Proficiency in incorporating sustainability and circularity principles into product design, production, certification and marketing, crucial for navigating sustainability-driven markets.
- **Project, quality, risk and change management**
  Competence in managing projects, ensuring quality, mitigating risks and facilitating change to steer the shift towards smart manufacturing.
- **Industry 4.0 implementation**
  Expertise in implementing Industry 4.0 technologies like advanced sensing, data collection, machine learning, process simulation and lean, green practices in product and process design.
- **Industry 5.0 integration**
  Understanding and integration of Industry 5.0 principles such as sustainability (net zero impact and circular economy), resilient industry approaches and human-centric approaches for adaptability to changing markets and operational environments.

Bioprocess engineering

- **Foundations of industrial biotechnology**
  Understanding the fundamentals of genetic engineering, metabolic engineering and synthetic biology and their applications for manufacturing bioproducts.
- **Industrial fermentation**
  Advanced understanding of various industrial fermentation processes, including key parameters in the bioprocess control, optimisation and scale-up stages.
- **Bioproducts separation and purification**
  Enabling the selection and application of separation and purification technologies for bioproducts, including biochemicals, protein/enzymes and pharmaceuticals.
- **Advanced bioprocess modelling and design**
  enhancing your skills in critical appraisal, analysis, synthesis, creativity, communication, teamwork and professional ethics.
- **Biorefineries and sustainable products**
  Understanding the role of biorefineries in global decarbonisation, renewable feedstocks and sustainable products from biorefineries, key biorefinery technologies and biorefinery assessment.

Stack your qualifications

Stacking qualifications allows you to develop new skills and capabilities at a pace that suits you.

Microcredentials
(6 credit points)

Graduate Certificate in Digital and Robotic Manufacturing
(48 credit points)

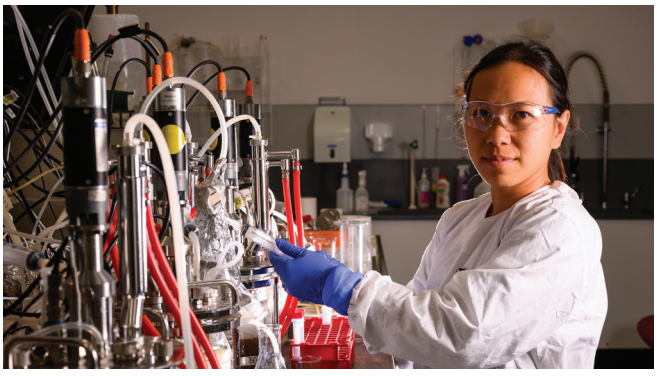
Graduate Certificate in Bioprocess Engineering
(48 credit points)

Master of Engineering Technology
(96 credit points)

Master of Advanced Manufacturing
(144 credit points)

Master of Advanced Manufacturing with Data Analytics
(192 credit points)

Master of Advanced Manufacturing with Project Management
(192 credit points)





Capabilities that make a difference

The QUT postgraduate courses in engineering equip students with the following capabilities:

- Strategic application of technologies and modes of manufacturing to streamline operations and innovate
- Technical and professional leadership in the workplace
- Utilise data analytics and optimisation techniques to boost the efficiency and economy of systems and processes
- Undertake critical analysis and evaluation of engineering activities
- Collaborate and communicate effectively with multi-disciplinary teams to deliver outcomes
- Engage in reflective practice to enhance project deliverables
- Demonstrate culturally responsible professional engineering practice
- Consider the ethical, environmental, social and economic outcomes for engineering activities.

Leverage your learning

Completion of our postgraduate courses will equip you with key competencies that may assist with an application for an Engineers Australia Chartered credential.

The Engineers Australia Chartered credential is recognised nationally and internationally as a measure of excellence and presents prospective clients with immediate confidence in your abilities.

Why choose QUT

- Gain access to our world-class facilities including our Mackay Pilot Plant and ArmHUB—our jointly owned innovation hub for agile robotics, AI and design for manufacture.
- Commonwealth Supported Places (CSPs) are available for domestic students. This means you may not have to pay anything upfront if you're eligible for a HELP loan.
- Engage with pre-recorded lecture content at a time that suits you whilst making the most of face-to-face opportunities to expand your professional networks.
- Access real-world content that has been developed with industry, for industry.
- Personalise your experience with a mid-year intake and the option to study either full time or part time.

Explore the courses on offer by visiting our website, or contact us directly to discuss your training needs.

bit.ly/PostGradEngineering
postgraduate.engineering@qut.edu.au
linkedin.com/showcase/qut-foe/

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