NEWS RELEASE

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NTU Singapore launches two new degree programmes in robotics and advanced chemical and pharmaceutical manufacturing

Nanyang Technological University, Singapore (NTU Singapore) is introducing two new undergraduate degree programmes in robotics and advanced chemical and pharmaceutical manufacturing in August 2025.

The two programmes are designed to meet an anticipated global demand for roboticists as industries continue to automate and cultivate a pipeline of talent with a unique skill set spanning chemistry and chemical engineering for Singapore's advancing high-tech economy.

NTU Deputy President and Provost Professor Ling San said: "NTU works closely with industry partners to design academic offerings that anticipate global trends so that the skills our students learn will remain relevant and meet the demands of an evolving workplace.

"This is reflected in our two new degree programmes, which will help our students seize opportunities in robotics and advanced manufacturing in the chemical and pharmaceutical industries – two areas that are crucial for Singapore's growth. These programmes are also incorporated with AI-related elements to ensure that our students continue to thrive in a world augmented by the technology."

The **Bachelor of Engineering in Robotics** focuses on acquiring practical and future-ready robotics skills that are relevant to industry needs and is in line with Singapore's vision to become a Smart Nation.

The **Double Major Bachelor of Engineering Science in Process Engineering and Synthetic Chemistry** aims to nurture a new breed of graduates who can navigate the intricacies of chemistry and chemical engineering – a unique skillset that is currently lacking – and boost Singapore's efforts to become a hub for advanced manufacturing and innovation.

Both programmes are interdisciplinary in nature and will incorporate courses on concepts such as artificial intelligence (AI) and machine learning to ensure students thrive in the ever-evolving scientific and industrial landscape.

Complementing these new programmes are NTU's **Interdisciplinary Collaborative Core (ICC)** courses, which are mandatory for all undergraduates. These courses are curated to focus on key transferable skills and global challenges and cover topics such as digital literacy, communication and inquiry, and ethics.

Bachelor of Engineering in Robotics

In Singapore's universities, robotics is either offered as a specialisation under an engineering degree programme, or as a degree programme that focuses on the development and deployment of robotics systems.

NTU's new Bachelor of Engineering in Robotics degree programme, which will be offered by the **School of Mechanical and Aerospace Engineering (MAE)** in the new academic year starting in August 2025, provides students with the depth and breadth to succeed in the future robotics sector.

Supported by NTU's partners across industries such as smart manufacturing, infrastructure and urban development, and robotics, this programme integrates core disciplines in robotics, offering a balance of mechanical, mechatronics, electrical, and artificial intelligence courses.

The programme also provides hands-on and immersive learning to prepare graduates with a multidisciplinary foundation essential for success across robotics and advanced manufacturing fields.

With NTU being part of the Jurong Innovation District ecosystem, the launch of the robotics programme could kick-start more synergistic opportunities between the University and the technology companies and R&D centres located within the Jurong Innovation District.

Students who are keen to focus more on experiential learning can opt for the **Work-Study Degree pathway**, where they will embark on multiple on-the-job trainings as part of the programme. These on-the-job trainings are on top of NTU's mandatory internship requirement for all degree programmes, and are meant to enhance students' employability by giving them more opportunities to apply their skills, and deepening their understanding of real-world practices.

The new programme builds on the University's expertise in robotics, such as biorobotics, rehabilitation engineering, robotic microsurgery, and human-machine

physical interaction, and intelligent transport systems. Since establishing the Robotics Research Centre in 1994 – one of Singapore's pioneering robotics R&D entities – NTU has become a leader in robotics research and graduate education.

Students can also benefit from mentorship by NTU MAE faculty, many of whom are veteran entrepreneurs with an illustrious track record of launching start-ups.

With robotics technologies increasingly applied in various sectors from logistics to healthcare, graduates from this programme are expected to be highly sought after as engineers who design, build, operate, and integrate robotic systems seamlessly into various industrial and commercial settings.

Double Major in Process Engineering and Synthetic Chemistry

The new Double Major Bachelor of Engineering Science in Process Engineering and Synthetic Chemistry (PESC) is the **first integrated degree programme** in Singapore to cover the significant aspects of synthetic chemistry and chemical engineering. These areas are crucial to Singapore's growth as a hub for advanced manufacturing and innovation.

Synthetic chemistry expertise is pivotal in the creation of novel materials, pharmaceuticals, and fine chemicals. A proficiency in chemical process engineering will allow for the pharmaceuticals, petrochemicals, and materials to be manufactured efficiently, safely, and sustainably.

The PESC double major programme, offered by the **School of Chemistry, Chemical Engineering and Biotechnology (CCEB)**, is developed with feedback from NTU's partners in the pharmaceutical, petrochemical, semiconductor and information technology industries. The programme aims to develop in students this complementary skill set so they can bridge scientific understanding and analytical skills with practical engineering applications.

Concepts like AI, machine learning, project management, and intellectual property are also incorporated into the curriculum to enhance the students' technical skill sets and give them a competitive edge.

Students can also opt to do a specialisation in either Advanced Pharmaceutical Manufacturing or in Machine Learning and Data Analytics.

Graduates from this programme will be sought after in roles that encompass the development and production of new materials, sustainable production, and roles where upstream synthetic skills blended with downstream production optimisation is

required. They will also be primed to engage in impactful R&D endeavours that benefit not only Singapore but also the global landscape.

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About Nanyang Technological University, Singapore

A research-intensive public university, Nanyang Technological University, Singapore (NTU Singapore) has 35,000 undergraduate and postgraduate students in the Business, Computing & Data Science, Engineering, Humanities, Arts, & Social Sciences, Medicine, Science, and Graduate colleges.

NTU is also home to world-renowned autonomous institutes – the National Institute of Education, S Rajaratnam School of International Studies and Singapore Centre for Environmental Life Sciences Engineering – and various leading research centres such as the Earth Observatory of Singapore, Nanyang Environment & Water Research Institute and Energy Research Institute @ NTU (ERI@N).

Under the NTU Smart Campus vision, the University harnesses the power of digital technology and tech-enabled solutions to support better learning and living experiences, the discovery of new knowledge, and the sustainability of resources.

Ranked amongst the world's top universities, the University's main campus is also frequently listed among the world's most beautiful. Known for its sustainability, NTU has achieved 100% Green Mark Platinum certification for all its eligible building projects. Apart from its main campus, NTU also has a medical campus in Novena, Singapore's healthcare district.

For more information, visit www.ntu.edu.sg