NANYANG TECHNOLOGICAL UNIVERSITY
SINGAPORE

NTU AT A GLANCE 2022

ENGINEERING
BUSINESS
SCIENCE
HUMANITIES, ARTS AND SOCIAL SCIENCES
EDUCATION
MEDICINE

World's No.1
Young University
since 2014

Contents

Vision & Mission

A great global university founded on science and technology, nurturing leaders and creating societal impact through interdisciplinary education and research

ABOUT NTU SINGAPORE

Profile

- Ranked 19th among the world's top global universities*
- Ranked 1st among the world's best young universities since 2014#
- Research-intensive with lion's share of competitive funding in Singapore (about S$7.2b from 2005 to 2020)
- Ranked No. 1 in Asia and No. 3 in the world by Citations for Artificial Intelligence (AI) (2010-19)>
- About S$2.6b for sustainability research from FY2005 to FY2020
- S$628m in competitive research grants in FY2020/21
- Strengths in engineering, science, business, humanities, arts, social sciences, education, international studies and medicine
- Joint medical school with Imperial College London
- 10th most-cited university for engineering research output
- Joint labs on campus with leading multinationals such as Alibaba, Rolls-Royce, BMW, Lockheed Martin and Johnson Matthey
- Frequently named among the world's most beautiful universities; medical campus in Novena, Singapore's healthcare district, and alumni clubhouse and executive centre in one-north
- One of the world's greenest campuses with 61 Green Mark-certified (equivalent to LEED-certified) building/campus developments
- 25 halls of residence housing more than 14,000 students
- 20 joint and dual PhD programmes with overseas universities
- About 24,870 undergraduates and 9,510 graduate students from about 78 countries
- About 4,700 faculty and researchers from about 74 countries
- Approximately 266,200 university alumni representing 156 nationalities

**Quacquarelli Symonds (QS) World University Rankings*
#QS Top 50 Under 50
>Elsevier SciVal

Official university colours: NTU RED NTU BLUE

Established in 1991, Nanyang Technological University, Singapore (NTU Singapore) has roots that go back to 1981 when its predecessor institution, Nanyang Technological Institute, was set up on the grounds of the former Nanyang University as a teaching university to meet a national demand for trained engineers.

As one of the two largest public universities in Singapore, NTU has expanded its teaching roots to become a comprehensive research-intensive university. Diverse educational pathways and the push for interdisciplinary learning continue to reflect its role as a teaching university, where novel pedagogies and teaching approaches are used.

At the same time, as a young and dynamic institution, NTU has rapidly ramped up its research capabilities in the last two decades, with many world-renowned researchers joining its faculty. It continues to push the frontiers of knowledge with innovative multidisciplinary discoveries that address humanity's grand challenges and national priorities, many in areas shaping the 4th Industrial Revolution. There is a university-wide emphasis on integrating education, research and innovation for the best outcomes.

The NTU Smart Campus is a living test bed for Singapore's Smart Nation initiative and a model of sustainable living.

Yunnan Garden campus

Novena campus

Lee Kong Chian School of Medicine

The **Lee Kong Chian School of Medicine** is named after Lee Foundation founder and philanthropist Tan Sri Dato Lee Kong Chian, following a landmark gift of S$150m. The School prepares the brightest minds for the demands of 21st-century healthcare and has introduced innovations to medical education.

A rich heritage: National monuments on campus

Gazetted as a national monument in 1998 and now housing the Chinese Heritage Centre for research on Chinese overseas, the former Nanyang University Administration Building overlooks the historical Yunnan Garden.

The Nanyang University Memorial and original Nanyang University Arch were also declared national monuments of Singapore in 1998.

Global standing

As a young university, NTU has gone very far in a short time. It is frequently ranked the best young university under 50 years old and within the top 50 universities overall. Many of its programmes are in the top 10 globally.

NTU is ranked 19th by Quacquarelli Symonds (QS), 33rd by US News & World Report and 46th by Times Higher Education (THE). Among young universities less than 50 years old, NTU is ranked first by QS, which has placed it first since 2014.

NTU has **four subjects in interdisciplinary fields ranked the world's best**: Materials Science (US News & World Report), Nanoscience and Nanotechnology (US News & World Report and ShanghaiRanking), Condensed Matter Physics (US News & World Report) and Physical Chemistry (US News & World Report). Energy and Fuels was ranked the world's best in 2020 and the world's second best in 2021 (US News & World Report). Energy Science was ranked the world's best in 2019 and 2020 and the world's second best in 2021 (ShanghaiRanking).

Ranked second among the world's elite young universities that have excelled in producing high-quality research (inaugural Nature Index Young Universities ranking), NTU is also known for its strengths in chemistry, environmental studies, artificial intelligence, education, communication, and computer science and engineering.

The BSc (Data Science and Artificial Intelligence) degree programme launched in AY2018 was cited by Forbes as one of the 10 best in the subject.

NTU attracts eminent international faculty and a large share of Singapore's top students, with many of its programmes oversubscribed and its renaissance engineering, business and medical programmes accepting only the most outstanding students.

The high calibre of NTU's faculty has also been pivotal to its rapid rise in global rankings. The number of NTU publications in international refereed journals with impact factor ≥ 10 jumped from 340 in 2015 to 1,107 in 2021, while the number of NTU publications in international refereed journals with impact factor ≥ 20 in 2021 has grown more than 4 times since 2015. The number of highly cited NTU researchers has also risen, with 36 researchers in the Highly Cited Researchers 2021 (Clarivate Analytics) list, the highest number for any Singapore university for the fourth year running.

At the heart of NTU's ambitions is the desire to further translate its academic standing into societal impact.

Deep links with Asia, global connections

NTU's international outreach is broad and strong and includes more than 570 academic and research partnerships with institutions across the United States, Europe, the Asia-Pacific and beyond. The University has over 200 industry partners. Two-thirds of NTU's faculty and research staff are international, representing 73 countries.

Global University Leaders Forum

NTU is a member of the Global University Leaders Forum, an intellectual community within the World Economic Forum in Davos. Through its involvement, NTU helps to set the agenda for discussions around the future of higher education, innovation and research with other leading universities in the world.

Global Alliance of Technological Universities

NTU is one of the seven founding members of the Global Alliance of Technological Universities (GlobalTech), a network of top technological universities united in addressing global issues through leading-edge science and technology. The eight members of GlobalTech are:

- Carnegie Mellon University
- Georgia Institute of Technology
- Imperial College London
- Indian Institute of Technology Bombay
- Nanyang Technological University
- Shanghai Jiao Tong University
- Technische Universität München
- University of New South Wales

Association of Pacific Rim Universities

NTU is on the international policy advisory committee of the Association of Pacific Rim Universities (APRU) and is scheduled to host the APRU Annual Presidents' Meeting in 2023.

Governance

The 18-member NTU Board of Trustees is a key pillar of university governance and sets the broad strategic directions for the University. The President is the University's Chief Executive Officer. The President's Council forms the core leadership team of the University and comprises the President, Deputy President and Provost, Senior Vice President (Research), Senior Vice President (Health and Life Sciences), Senior Vice President (Administration) and Vice President (Strategy & Leadership Development).

Chancellor

The President of the Republic of Singapore is the Chancellor of the University.

Colleges

College of Engineering

The largest engineering college in the world with six schools focused on technology and innovation; 10th most-cited university for engineering research output according to Essential Science Indicators; ranked 4th globally and 1st in Asia for Engineering and Technology by QS World University Rankings; home to Singapore's preferred engineering programme for top A-level graduates.

Schools:

- School of Chemical and Biomedical Engineering
- School of Civil and Environmental Engineering
- School of Computer Science and Engineering
- School of Electrical and Electronic Engineering
- School of Materials Science and Engineering
- School of Mechanical and Aerospace Engineering

College of Science

Award-winning faculty and world-class laboratories; ranked 3rd globally and 1st in Asia for Chemistry by US News & World Report; ranked 26th in the world for Physical Sciences by Nature Index; offers Singapore's first double degree programme in Biomedical Sciences and Traditional Chinese Medicine in partnership with Beijing University of Chinese Medicine.

Schools:

- Asian School of the Environment
- School of Biological Sciences
- School of Physical and Mathematical Sciences

Nanyang Business School (College of Business)

Consistently ranked among the world's premier business schools, with an MBA programme that is rated among Asia's top MBA programmes and the best in Singapore; first business school in Singapore, and the fifth in the Asia-Pacific, to be accredited by both the European Quality Improvement System and Association to Advance Collegiate Schools of Business.

College of Humanities, Arts, and Social Sciences

Home to the best school in Asia for communication and media (QS World University Rankings and Academic Ranking of World Universities); fast-growing humanities and social sciences schools with special strengths in research on Asia; and Singapore's first professional art school offering degree courses in art, design and interactive digital media.

Schools:

- School of Art, Design and Media
- School of Humanities
- School of Social Sciences
- Wee Kim Wee School of Communication and Information

Graduate College

Drives excellence in graduate education at NTU, covering research, interdisciplinary and coursework programmes; promotes inter-school collaboration and establishes joint-degree and exchange programmes through external partnerships.

Autonomous institutes

National Institute of Education

Singapore's national teacher education institute and an integral part of the nation's education service, playing a key role in the preparation of teachers; provides educational consultancy to countries around the world; ranked 2nd in Asia (QS World University Rankings) and among the top 4 in Asia (Academic Ranking of World Universities) for education.

S Rajaratnam School of International Studies

A leading think tank and graduate school in strategic and international affairs in the Asia-Pacific; produces cutting-edge research on Asia-Pacific security, multilateralism and regionalism, conflict studies, non-traditional security, cybersecurity, maritime security and terrorism studies.

Lee Kong Chian School of Medicine

Offers both undergraduate and graduate programmes, with Singapore's National Healthcare Group as its primary clinical partner; trains doctors who put patients at the centre of their exemplary care; first doctors graduated in 2018 with a Bachelor of Medicine and Bachelor of Surgery (MBBS).

Earth Observatory of Singapore

Established in 2008 with S$150m in state funding; NTU's first Research Centre of Excellence and a recognised regional leader in understanding environmental threats; the first Asian organisation to receive a S$5m endowment from the global AXA Research Fund.

Singapore Centre for Environmental Life Sciences Engineering

NTU's second Research Centre of Excellence set up with S$120m in government funding to harness microbial biofilms for water and environmental sustainability.

Chinese Heritage Centre

Advances knowledge and understanding of ethnic Chinese communities around the world, with a research centre, museum and library housed in the historic Administration Building of the former Nanyang University.

Recruiting the best

Exceptional young international faculty from diverse disciplines are drawn into the University's academic and research enterprise through the **Nanyang Assistant Professorship** scheme, which awards grants of up to S$1m over four years for cutting-edge research, as well as the prospect of tenure-track appointments.

Outstanding young researchers may also apply for prestigious fellowships in science and technology under a scheme promoted by the Singapore National Research Foundation (NRF), which could lead to an offer of a faculty position at NTU and research funding of up to S$3.25m over five years.

NTU is committed to attracting the brightest post-doctorates and PhD students locally and globally. Quality graduate programmes, including joint PhD programmes with top overseas universities, and attractive scholarships, such as the **Nanyang President's Graduate Scholarship**, **NTU Research Scholarship** and **Singapore International Graduate Award**, help draw the very best research talent from all over the world.

The **NTU Presidential Postdoctoral Fellowship** invites outstanding early career researchers in all disciplines to embark on their careers in NTU. This Fellowship provides up to S$200,000 in research funding over two years to enable the Fellows to develop their independent research. Personal development opportunities coupled with mentorship in an established research group empower the Fellows to strive for research excellence and impact as they meet their ambitions as global research leaders.

The **Wallenberg-NTU Presidential Postdoctoral Fellowship**, supported by the Knut and Alice Wallenberg Foundation, draws talents in the emerging areas of artificial intelligence, autonomous systems and software. Fellows start their research journey at NTU with up to S$100,000 in research funding, followed by a second year at a Wallenberg AI, Autonomous Systems and Software Programme (WASP) research partner institution in Sweden. This fellowship offers early career researchers a unique opportunity to develop their research career and gain international experience in both Asia and Europe.

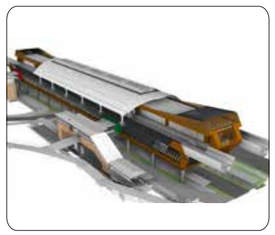
Residential community

The Yunnan Garden campus provides a serene backdrop to 25 halls of residence housing more than 13,000 undergraduates and 1,400 graduate students.

About 44% of full-time undergraduates live on campus. Housing is also available for international academics at the residential zone.

A town called NTU

- NTU has the largest on-campus residence infrastructure in Singapore.
- Under a **Campus Master Plan**, new learning, living, research and recreational spaces have been created to foster multidisciplinary pursuits and a collegiate culture. Two large learning hubs, The Hive and The Arc, centrepieces of flipped classroom learning at NTU, and a lifestyle hub, the North Spine Plaza, are part of this transformed landscape. A new six-storey academic complex with 25 smart classrooms will be completed in 2022.
- About 39% of NTU's full-time student population and 61% of faculty call NTU home.
- Abundant food options on campus include 16 food courts/canteens (with 120 food and beverage stalls in total) and 29 restaurants/F&B outlets.
- Yunnan Garden, a 9-hectare precinct for leisure, education and heritage, offers a sprawling open space of greenery and waterscapes.
- From 2029, 3 Mass Rapid Transit stations will be located on the main campus as part of the Jurong Region Line.



NTU 2025

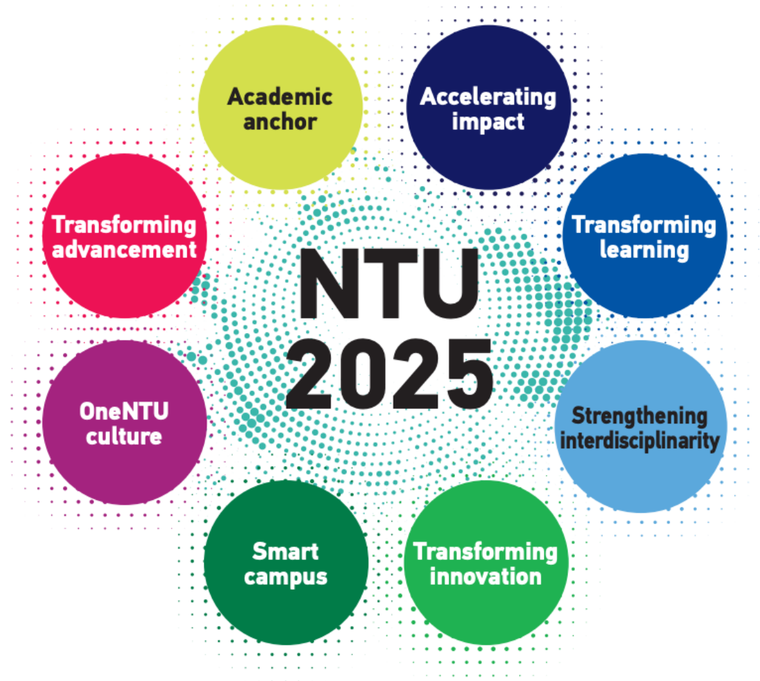
The **NTU 2025 strategic plan**, launched in January 2021, details NTU's education, research and innovation ambitions and goals for the next five years and the specific actions it will take to achieve them.

It builds on the University's unique intellectual assets and strives to play a key role in supporting Singapore's national R&D priorities as it addresses four of humanity's grand challenges: mitigating our impact on the environment; harnessing the science, art and technology of learning; addressing technology's impact on humanity; and addressing the needs of ageing communities.

In pursuit of the plan, NTU will aim to:
- achieve uniformity of excellence in all its activities
- grow NTU's national, regional and global impact
- deepen its disciplinary strengths while nurturing greater interdisciplinary collaborations

NTU 2025 reinforces NTU's strong commitment to the four core pillars of the University:
- Education
- Research
- Innovation
- Community

Eight key initiatives under NTU 2025



Eight key initiatives under NTU 2025

1. Transforming learning
- New interdisciplinary programmes
- New learning spaces and models that tap advances in the science, art and technology of learning
- New industry-relevant, modular continuing education offerings
- Synergistic integration of NTU's unique strengths with the unique capabilities of the National Institute of Education and the National Institute of Early Childhood Development at NTU

2. Strengthening interdisciplinarity
- Interdisciplinary faculty appointments across NTU
- A critical mass of faculty, staff and students in areas of scientific and strategic importance, e.g. Health & Society, Artificial & Augmented Intelligence, Resilient Urbanisation & Natural Ecosystems, and Future of Industry

3. Transforming innovation
- New ways to support SMEs through technology transfer
- Specialised training for entrepreneurship at NTU
- Policies and practices that make it easier for faculty to translate research into commercial ventures
- Grow visibility of entrepreneurship on campus
- Create and grow a network of global industry partnerships with companies, e.g. through the newly formed Global Alliance of Industries@NTU (GAIN)

4. Smart campus
- Promote sustainability and the NTU campus as a testbed to demonstrate innovative digital and tech-enabled solutions for better learning and living
- On-campus testbedding (e.g. innovative green energy, lower carbon footprint and waste management technologies)
- All NTU buildings to be Green Mark Platinum-certified
- Undertake clean energy and autonomous vehicle development and pilot projects (on and off campus)
- Halve net energy utilisation, water usage and waste generation each by March 2026, compared to the levels of 2011
- Encourage overall use of digital technologies

5. OneNTU culture
- Develop and nurture the OneNTU spirit through shared values and engaging key stakeholders including alumni
- Undertake longitudinal surveys to gauge and improve employee and student engagement

6. Transforming advancement
- Engagement of alumni, partners, industry collaborators, foundations and other stakeholders to strengthen the efforts of university advancement

7. Academic anchor
- Develop NTU as the academic and research backbone of a new ecosystem of R&D centres, technology partners, training providers and future factories in the Jurong Innovation District adjacent to NTU
- Connect NTU's intellectual assets in diverse areas (e.g. logistics, supply chains, autonomous systems, commerce and maritime studies) with the new Tuas Mega Port infrastructure close to the NTU main campus
- Enhance NTU's island-wide connectivity with the new Jurong Region Line (3 MRT stations on campus by 2029)
- Strengthen NTU's medical school as a key pillar of HealthCity Novena

8. Accelerating impact
- Create and nurture unique, world-leading academic and research entities and foster outcomes that address industry and societal needs
- Build cross-college teams and local and global networks to address humanity's grand challenges

These initiatives will be supported through **3** enablers that enhance excellence needed for success in the plan: **talent**, **financials** and **technology**




Sustainability Manifesto

- In October 2021, NTU unveiled its 15-year manifesto for sustainability, which will solidify its position as a global leader in sustainability. Under the manifesto, NTU aims to achieve carbon neutrality by 2035, halve net energy utilisation and introduce new courses on sustainability, among other initiatives.

- To support its corporate and sustainability goals, NTU issued the **world's first publicly-offered sustainability-linked bond by a university** under its S$1 billion medium-term note programme. This will allow NTU to leverage the capital markets to propel its wide-ranging sustainability efforts over the next 15 years.

RESEARCH

NTU's research success stems from inclusivity, interdisciplinary collaboration and assembling a critical mass of talent in specific domains, as well as investing in infrastructure.

Research planning takes into account the capabilities of NTU, its strategic priorities and national strategic initiatives, while leaving space for curiosity-driven research. The University draws some of the world's top faculty who contribute substantially to NTU's scientific papers in high-impact journals. To encourage greater interdisciplinary collaboration, NTU also provides seed funding for bold and unconventional cross-disciplinary research by interdisciplinary faculty teams.

NTU performs cutting-edge research through various strategic national and international research programmes. The University hosts two out of five national Research Centres of Excellence (RCEs) – the Earth Observatory of Singapore and Singapore Centre for Environmental Life Sciences Engineering, both conducting research aligned with the long-term strategic interests of Singapore. NTU is also the lead local partner in 7 out of 9 national CREATE centres, set up with elite international universities.

Research in NTU is carried out within and across the colleges/schools and RCEs, supported by 9 university-level research institutes, 10 Corporate Labs*, 54 research centres under the colleges/schools, and 30 joint centres with external organisations.

Research funding

NTU has consistently won competitive funding of around **S$600m annually**. It has received about S$3b in research funding over the past five years.

Strategic partnerships

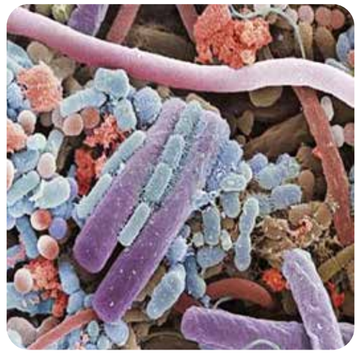
NTU collaborates extensively with the public and private sectors with commercialisation outcomes. The drive to deepen engagement with the private sector and facilitate the application of research has resulted in **over 200 industry partners**, as well as **15 Corporate and Joint Laboratories**, 11 of which were added in the last five years. The collaborations through Corporate Laboratories have generated S$700m of research activity over the last five years.

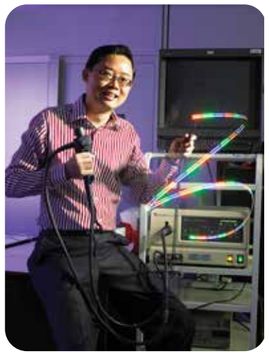
Testbed projects with partners include the **EcoCampus initiative** to develop a novel campus-wide sustainability framework with demonstration sites to reduce energy, water, and waste intensity and make NTU one of the world's most eco-friendly campuses. The Centre of Excellence for Testing & Research of Autonomous Vehicles (CETRAN) operates a 1.8 ha AV test centre built by JTC Corporation. CETRAN works with companies like Volvo and SMRT to determine autonomous vehicle roadworthiness in operational trials.

Key research centres and institutes

- Active LIving for the ElderLY (LILY)
- Ageing Research Institute for Society and Education (ARISE)
- Air Traffic Management Research Institute (ATMRI)
- Alibaba-NTU Singapore Joint Research Institute
- Artificial Intelligence Research Institute (AI.R)
- Centre for Advanced Robotics Technology Innovation (CARTIN)
- Centre for Research and Development in Learning (CRADLE)
- Centre for Smart Platform Infrastructure Research on Integrative Technology@NTU (SPIRIT)
- CNRS-International-NTU-Thales Research Alliance (CINTRA)
- Continental-NTU Corporate Lab: "Future-Oriented Continental Urban Society (FOCUS) Lab"*
- CSA-NTU Joint Centre (CNJC)
- Cyber Security Research Centre@NTU (CYSREN)
- Data Science and Artificial Intelligence Research Centre@NTU (DSAIR)
- Delta-NTU Corporate Laboratory*
- Emerging nanoscience Research Institute (EnRI)
- Energy Research Institute@NTU (ERI@N)
- F&N-NTU F&B Innovation Lab
- Fraunhofer Singapore
- Future Ready Food Safety Hub@NTU (FRESH@NTU)
- GFS-NTU Joint Programme on Advanced ReRAM Technology for Embedded Systems*
- HP-NTU Digital Manufacturing Corporate Laboratory*
- Institute for Digital Molecular Analytics and Science (IDMxS)
- Joint NTU-WeBank Research Centre on Fintech
- Maritime Institute (MI@NTU)
- Nanyang Environment & Water Research Institute (NEWRI)
- NTU Institute for Health Technologies (HealthTech NTU)
- NTU Integrated Medical, Biological & Environmental Life Sciences (NIMBELS)
- NTU-JTC Industrial Infrastructure Innovation Centre (NTU-JTC I3C)
- NTU-PKU Joint Research Institute
- Office of Research and Technology in Defence and Security (ORTDS)
- Rapid-Rich Object SEarch Lab (ROSE)
- Rehabilitation Research Institute of Singapore
- Rolls-Royce@NTU Corporate Laboratory*
- Saab-NTU Joint Research Centre
- Schaeffler Hub for Advanced REsearch at NTU (SHARE@NTU)
- Singapore Centre for 3D Printing (SC3DP)
- Singapore Energy Centre (SgEC)
- Singtel Cognitive and Artificial Intelligence Lab (SCALE@NTU)*
- Sino-Singapore International Joint Research Institute
- S-Lab for Advanced Intelligence (S-Lab)*
- Smart Mechatronic Lab for Industrial Collaborative Robotics in Manufacturing
- SMRT-NTU Smart Urban Rail Corporate Laboratory*
- SP Group-NTU Joint Laboratory (SP-NTU Joint Lab)
- ST Engineering-NTU Corporate Laboratory*
- Strategic Centre for Research in Privacy-Preserving Technologies & Systems (SCRIPTS)
- Surbana Jurong-NTU Corporate Laboratory*
- Temasek Laboratories@NTU
- The Photonics Institute (TPI)
- Transport Research Centre@NTU (TRC@NTU)

**Supported by Singapore's National Research Foundation under its Corporate Laboratory@University Scheme*





Preparing for the 4th Industrial Revolution

NTU is home to a critical mass of talent, resources and infrastructure in the key areas shaping the 4th Industrial Revolution.

In response to Singapore's Smart Nation ambitions and to address key societal questions posed by the advent of Industry 4.0, the **NTU Institute of Science and Technology for Humanity (NISTH)** was launched in 2019 to focus on responsible innovation and the impact of technology on society. The interdisciplinary institute brings together industry, government, academia and non-profit organisations to develop ideas and concepts for the prudent and ethical development of technology for the betterment of the human condition.

Some of NTU's partners in research and academia

Europe

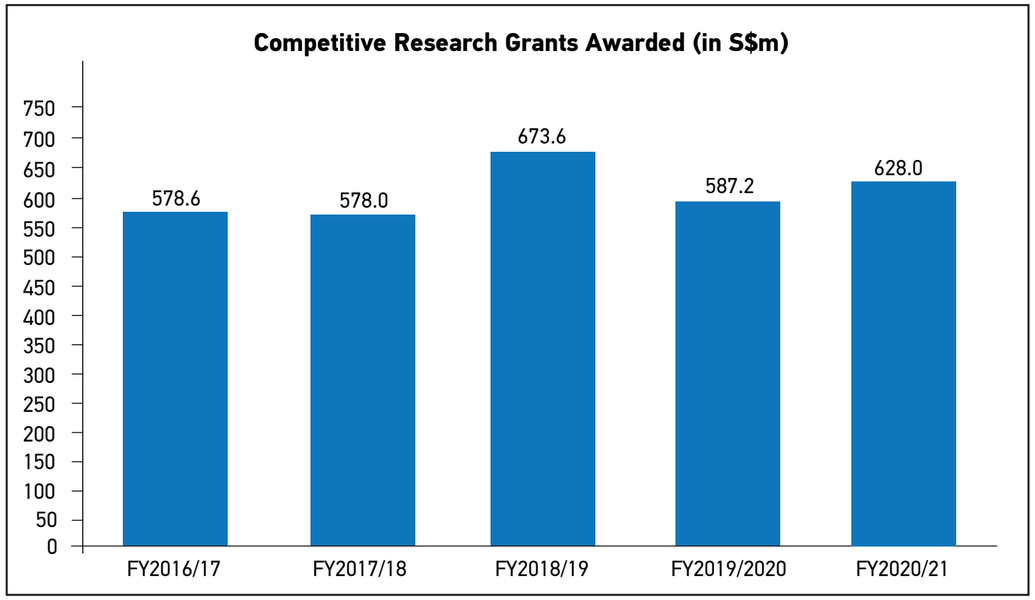
- Copenhagen Business School
- ETH - Eidgenössische Technische Hochschule Zürich
- Graz University of Technology
- Imperial College London
- Italian Institute of Technology
- Karolinska Institute
- King's College London
- KTH Royal Institute of Technology
- Medical University Vienna
- Norwegian University of Science and Technology
- Politecnico di Milano
- Sorbonne University
- Technical University of Denmark
- Technische Universität München
- Université Grenoble Alpes
- Université Paris-Saclay
- Université PSL (Paris Sciences et Lettres)
- University College London
- University of Cambridge
- University of Edinburgh
- University of Groningen
- University of Southampton
- Wageningen University

North America

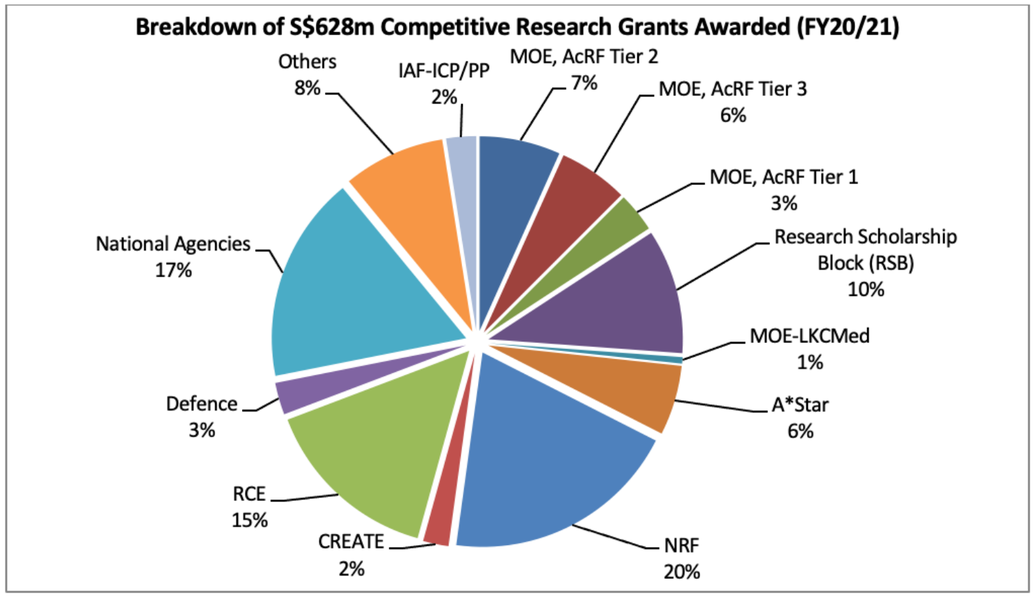
- California Institute of Technology
- Carnegie Mellon University
- Columbia University
- Cornell University
- Duke University
- Georgia Institute of Technology
- Massachusetts Institute of Technology
- Monterrey Institute of Technology and Higher Education
- Northwestern University
- University of British Columbia
- University of California, Berkeley
- University of California, Los Angeles
- University of Toronto

Asia and beyond

- Airlangga University
- Australian National University
- Beijing University of Chinese Medicine
- Chinese Academy of Sciences
- Chulalongkorn University
- Fudan University
- Gadjah Mada University
- Hebrew University of Jerusalem
- Hong Kong University of Science and Technology
- Huazhong University of Science and Technology
- Indian Institute of Technology Bombay
- Indian Institute of Technology Madras
- Korea Advanced Institute of Science and Technology
- Kyoto University
- Mahidol University
- National Taiwan University
- Osaka University
- Peking University
- Seoul National University
- Shanghai Jiao Tong University
- South China University of Technology
- Technion-Israel Institute of Technology
- The University of Hong Kong
- Tokyo Institute of Technology
- Tsinghua University
- University of Indonesia
- University of Malaya
- University of Melbourne
- University of New South Wales
- University of Tokyo
- Vietnam National University, Ho Chi Minh City
- Zhejiang University



Above figures include RSB and Tier 1



MOE AcRF:
The Ministry of Education's (MOE) Academic Research Fund (AcRF) encompasses three tiers of research grants, with Tier 1 grants being the smallest

NRF:
NRF grants, awarded by the Singapore government, include Competitive Research Programme (CRP), NRF Fellowship and Proof-of-Concept grants

Creating excellence

NTU has established a strong presence in CREATE (Campus for Research Excellence and Technological Enterprise), an initiative of Singapore's National Research Foundation to foster ties between elite universities and Singapore-based institutions.

Berkeley Education Alliance for Research in Singapore (BEARS)

A tie-up between NTU and University of California, Berkeley, to enhance the efficiency of buildings in the tropics through Building Efficiency and Sustainability in the Tropics (SinBerBEST) and Singapore-Berkeley Research Initiative for Sustainable Energy (SinBeRISE).

Cambridge Centre for Advanced Research in Energy Efficiency in Singapore (CARES)

A partnership with the University of Cambridge to help minimise the carbon footprint of industrial-scale chemical processes.

Nanomaterials for Energy and Water Management (NEW)

A CREATE alliance focused on using nanomaterials to improve energy and water management technologies.

Singapore-ETH Centre for Global Environmental Sustainability (SEC)

Spearheads research in sustainable design, planning and construction to meet urban challenges, through the Future Cities Laboratory (FCL) and Future Resilient Systems (FRS).

Singapore-MIT Alliance for Research and Technology (SMART)

MIT's largest international research programme involving NTU researchers, focused on solving societal problems through interdisciplinary research.

Singapore-Technion Alliance for Research and Technology (START)

A collaboration to advance the field of cardiac restoration therapy.

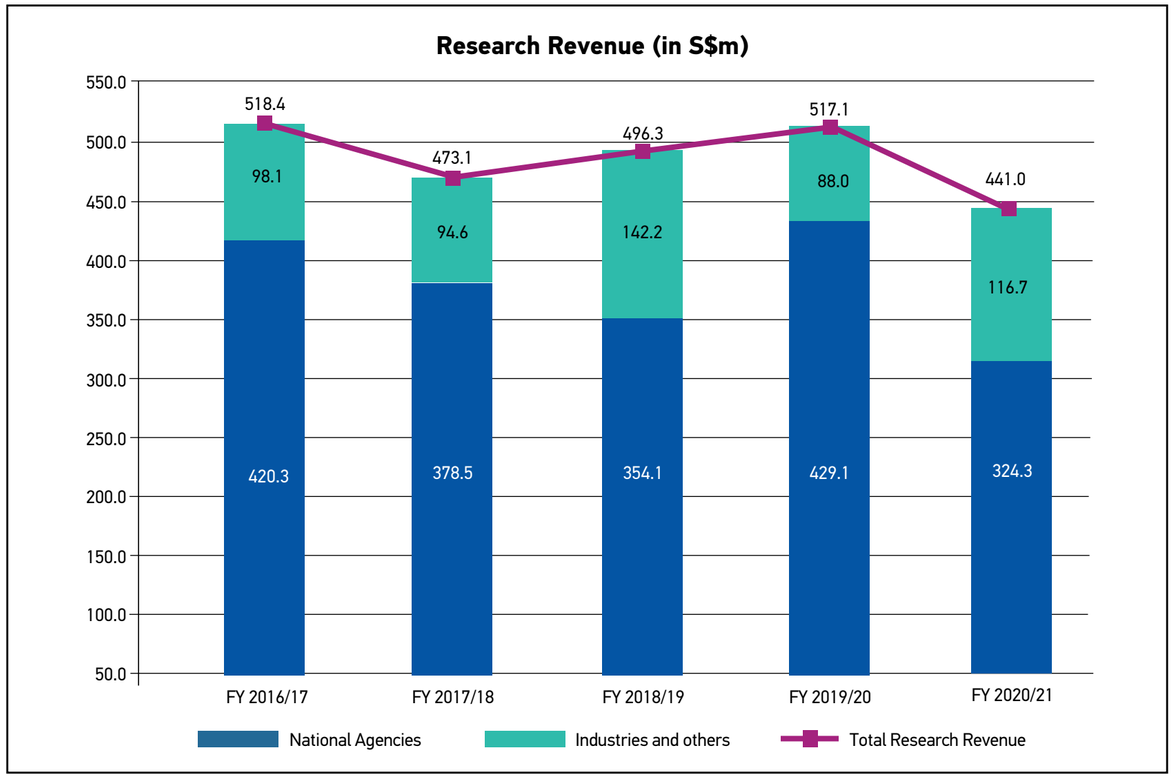
Technische Universität München (TUM) CREATE

Set up by NTU and Technische Universität München to develop sustainable transport solutions, including electric cars for Asian cities.

Major industrial research partners

- Alibaba Group*
- AON Benfield Asia
- AXA
- Bae Systems
- Carl Zeiss
- Continental*
- CW Group
- Delta Electronics*
- Desay SV Automotive Singapore Pte Ltd
- Durapower
- Dyson*
- Energizer Manufacturing
- Evercomm Uni-Tech Singapore
- F&N*
- GlobalFoundries*
- Gotion High-Tech Co Ltd
- Guoxuan High-Tech Co Ltd (Guoxuan)
- HP*
- Hutchinson
- JFE Engineering Corporation
- JTC Corporation
- Jurong Port
- KLASS Engineering and Solutions
- LightLab Sweden AB
- L'Oreal
- Lushang (Nanyang)
- Makino Asia
- Nanyang Biologics
- Nanyang Herbs
- Panasonic
- Photovoltaic Foundry Pte Ltd
- Rolls-Royce*
- Saab*
- Schaeffler*
- Sembcorp Design & Construction Pte Ltd
- Singtel*
- S-Lab*
- SMRT*
- SP Group*
- Sport and Fashion Management*
- Sportmaster*
- ST Engineering*
- Sunseap
- Surbana Jurong*
- Thales*
- WeBank*

**with laboratories/centres at NTU*



Strategic priority areas

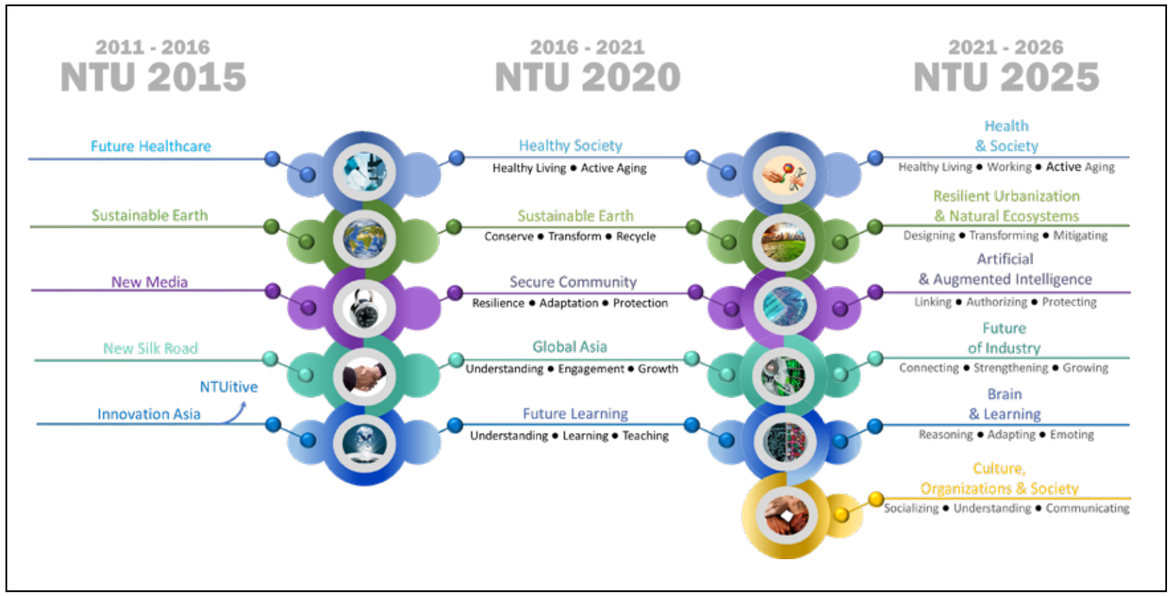
NTU's strategic five-year plans steer its research goals.

- **NTU 2015** – five Peaks of Excellence: Sustainable Earth, Secure Community, Healthy Society, Future Learning and Global Asia, representing established interdisciplinary areas across the University.

- **NTU 2020** – Peaks supplemented by Focus Clusters as well as Emerging and Aspirational Areas expected to develop rapidly at NTU.

- **NTU 2025** – research plan anchored by six clusters from Science, Technology, Engineering & Mathematics (STEM), as well as Social Sciences, Humanities & the Arts for People & the Economy (SHAPE). These interdisciplinary clusters are aligned to NTU's four Humanity Grand Challenges and mapped to strategic priorities.

Evolution of NTU's five-year research plans



NTU 2025 research strategy

The **NTU 2025 Research Plan** details a whole-of-university framework, allowing researchers from all disciplines to contribute. Together, the STEM and SHAPE Research Clusters provide touchpoints for cross-field engagement.

STEM Research Clusters

- Future of Industry
- Health & Society
- Resilient Urbanisation & Natural Ecosystems
- Artificial & Augmented Intelligence
- Culture, Organisations & Society
- Brain & Learning

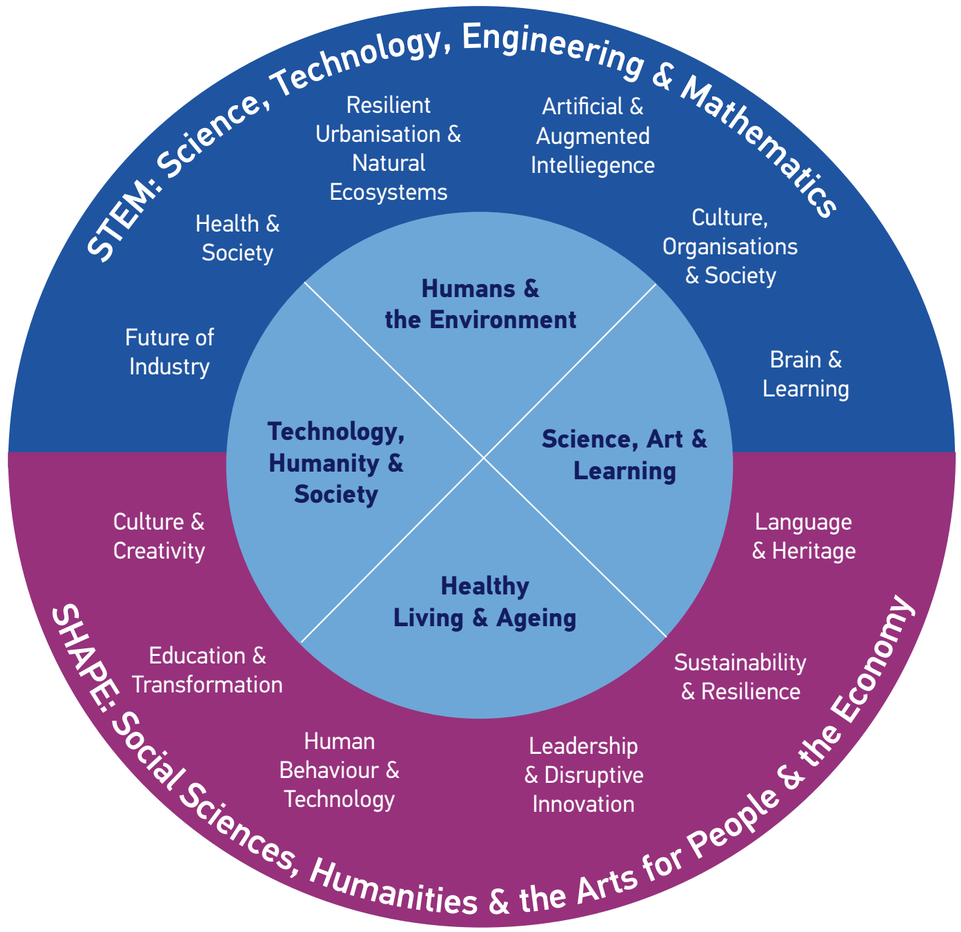
SHAPE Research Clusters

- Culture & Creativity
- Education & Transformation
- Human Behaviour & Technology
- Leadership & Disruptive Innovation
- Sustainability & Resilience
- Language & Heritage

The SHAPE Research Clusters aim to harness the diversity of NTU's research to position the University at the forefront in the fields of arts, social sciences, humanities, education and business. NTU aspires to develop these areas in the next five years to become on par with its strengths in science and technology.

The Research Clusters will be mapped to the four Grand Challenges NTU has identified:

- Technology, Humanity & Society
- Humans & the Environment
- Science, Art & Learning
- Healthy Living & Ageing



Integration of Grand Challenges with Research Clusters in NTU 2025

To facilitate knowledge transfer and stimulate new technologies, the new NTU-wide consortium, **Global Alliance of Industries@NTU (GAIN)**, with 250 industry partners, will catalyse new university-industry partnerships through multiple consortia, corporate laboratories, multidisciplinary institutes and technology invention disclosures.

INNOVATION

NTUitive, the innovation and enterprise company of NTU, manages the University's intellectual property, promotes innovation and facilitates the commercialisation of research. It translates research into viable solutions that meet industry needs, brings patents and technologies to market, and helps faculty and students to set up companies.

NTU has a **rapidly expanding patent portfolio** and earned S$10m in licensing revenue over the last five years. In 2020, Nanofilm Technologies, an NTU spin-off, became the first local deep technology unicorn to be listed on the Singapore Exchange.

NTUitive's engagement with NTU faculty and researchers has given rise to a **regular flow of technology disclosures** with a yearly average of 411 submissions between FY2016 and FY2020. The number of license agreements signed jumped from 70 in FY2016 to 98 in FY2020. The number of spin-offs (from faculty) and start-ups (by students) increased from 33 a year in FY2016 to 60 in FY2020. More than 230 NTU spin-offs and start-ups have been formed since FY2016.

NTUitive hosts 5 innovation clusters funded under a Singapore National Research Foundation programme that seeks to strengthen partnerships across companies, universities, research institutes and government to bring ideas to market rapidly:

- National Additive Manufacturing Innovation Cluster
- Separation Technologies Applied Research and Translation Centre
- Singapore National Membrane Consortium
- LUX Photonics Consortium
- Singapore National Biofilm Consortium

Vibrant innovation and entrepreneurship ecosystem

On campus, NTU's innovation and enterprise ecosystem includes talks, access to grants and mentorship programmes, as well as innovation challenges, hackathons, business plan competitions, venture-building programmes, "Making and Tinkering" courses and other forms of training. The **Nanyang Technopreneurship Centre** offers a Minor in Entrepreneurship, while the Open Innovation Lab at the **NTU Innovation Centre** and Makers' Labs and Garages across the campus provide the space, facilities and resources to tinker with inventions. NTU also has a joint engineering studio with Dyson Singapore for aspiring technopreneurs.

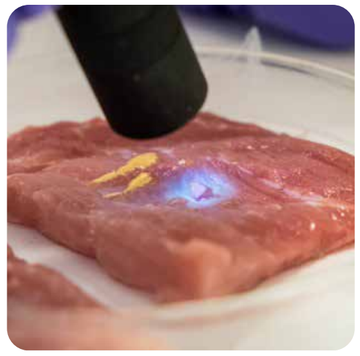
The **Overseas Entrepreneurship Programme** provides students with internship opportunities in key innovation hotspots, including Silicon Valley, New York, Berlin, London, Shanghai and Tel Aviv. Through NTUitive's overseas partnerships, NTU builds innovation capabilities outside Singapore in countries such as Indonesia, Vietnam and China.

Proprietary technologies

The University's successful start-ups have developed, among other innovations, COVID-19 testing technology, a proprietary wireless fast-charge technology for automated guided vehicles and robotics applications, an intelligent banking engine that streamlines banking operations, high quality shape-controlled silver nanoparticles, and technology to improve energy efficiency.

Some recently commercialised NTU innovations

TracieX COVID-19 breathalyser test



Biorubber glue that cures when exposed to UV light

Autonomous disinfection robot

EDUCATION

UNDERGRADUATE EDUCATION

NTU continually refreshes its pedagogies and curriculum (including co-curriculum) to cater to new learning paradigms and students' diverse interests, as well as to foster interdisciplinary competencies that help NTU graduates become adaptable lifelong learners.

The University currently offers 36 single degree programmes. Students can also choose from 16 double degree programmes, 1 integrated programme and 1 special programme.

NTU also offers double major programmes aimed at broadening career options. **Interdisciplinary options** have increased with a common interdisciplinary collaborative core curriculum and internships for all freshmen in AY2021. SkillsFuture Work-Study Degree programmes also provide deep industry exposure and enhance employability.

NTU Education, a strategic blueprint for undergraduate education, supports how students learn and provides them with opportunities to develop skills that will enable them to face the future with optimism and confidence. It emphasises leadership, communication, teamwork, ethics and digital literacy, and caters to new ways of learning, embedding the latest teaching practices, including the use of **flipped classrooms for interactive and team-based learning**, online lessons, as well as residential education at the NTU halls of residence.

NTU allows credits from Massive Open Online Courses (MOOCs) hosted on Coursera, edX and FutureLearn to be used to fulfil degree requirements. Approximately 30,000 learners have completed and passed NTU's MOOCs, of which almost 12,000 are NTU students who have completed them with credit transfer.

Technology-enhanced learning and flipped classroom learning – blended learning designed to increase student engagement – are well supported by NTU's smart classrooms within its learning hubs.

Bringing together top professors, the **Teaching Excellence Academy** fosters research to produce innovations that improve learning outcomes. The **Centre for Research and Development in Learning** at NTU is also advancing best practices in tertiary learning, while the new **Institute for Pedagogical Innovation, Research and Excellence (InsPIRE)** aims to strengthen synergies across pedagogy, technology, research and scholarship in teaching and learning.

NTU Education includes:

University Scholars Programme (USP)
A challenging multidisciplinary academic programme for the brightest students; offers a range of creative learning opportunities and fieldwork in unique destinations as well as a semester at institutions such as the University of Pennsylvania and King's College London.

Renaissance Engineering Programme (REP)
A fully-residential programme extremely popular with top students that bridges engineering, business and humanities to prepare students for leadership roles in interdisciplinary teams; students graduate with a Bachelor of Engineering Science degree and an MSc in Technology Management in 4.5 years; includes a full year of studies at Imperial College London, University of California (Berkeley), Northwestern University or University of British Columbia, as well as access to technology hubs in these regions.

CN Yang Scholars Programme
Nurtures future leaders at the interface of science and engineering, with a focus on technological innovation and scientific communication; accelerated PhD track.

Undergraduate Research Experience on CAmpus (URECA)
For students with a passion for research; gives access to research projects campus-wide and incorporates industrial research experience; students work independently under the guidance of a professor or researcher.

Global Education and Mobility (GEM)
Global learning opportunities to prepare students to be global citizens. Annually, more than 6,000 students attend overseas immersion programmes in over 40 countries. Students are able to experience studying and working abroad via a diverse range of programmes, from semester and short-term study exchange to overseas internships and overseas community projects.

GEM Explorer enables students to take courses or conduct research in an overseas partner university for a full semester while exploring a new country and culture.

GEM Discoverer offers various programmes (ranging from 2 to 8 weeks) that place students globally for summer studies, business/cultural executive programmes and language training.

Overseas Internships provide opportunities for students to widen their perspective of the working world and develop global readiness.

Overseas Entrepreneurship Programme lets undergraduates gain entrepreneurial experience outside of the classroom with internships in technology-based start-ups in global innovation hotspots.

Overseas Community Engagement Projects enable students to serve communities abroad, creating sustainable impact in neighbouring countries in ASEAN or the Asia region.

GRADUATE EDUCATION
NTU's graduate academic and research programmes, a number of which are ranked among the best globally, cater to more than 8,500 students from Singapore and around the world. Enrolment for NTU's Master's programmes rose 40% from 4,473 in AY2018 to 6,270 in AY2021.

NTU's network of global partners for joint/dual PhD programmes has increased over the years through the establishment of new research collaborations with internationally renowned universities. NTU currently has 20 joint/dual PhD degree programmes with overseas partners.

The **NTU Graduate College**, headed by a Dean, provides strategic oversight and academic leadership on all graduate education matters in the University. It hosts the **Interdisciplinary Graduate Programme**, which supports research students working on interdisciplinary projects that cover two or more disciplines, such as artificial intelligence and neuroscience.

EXECUTIVE AND CONTINUING EDUCATION
The **Centre for Professional and Continuing Education (PaCE)** consolidates continuing education and training capabilities and expertise within the University, in line with the Singapore government's emphasis on advancing adult education and professional development for Singapore's workforce to better meet future challenges.

PaCE leverages technology to enrich the lifelong learning experience of adult learners, including the University's alumni, making it easier for them to take charge of their own continuing education. Micro-credentials obtained via stackable modular continuing education courses may be accepted as partial fulfilment of the requirements for a full NTU Master's degree.

Besides the programmes offered by PaCE, customised executive training programmes are also conducted by the Nanyang Business School, College of Engineering, College of Humanities, Arts, and Social Sciences, Nanyang Centre for Public Administration and Confucius Institute. 227 programmes were conducted in AY2019-20, and 357 programmes in AY2020-21. These programmes attracted approximately 5,309 and 9,991 participants respectively.

NTU is a popular choice for executive training of officials from India, China and Cambodia, which also helps strengthen bilateral relations.

STUDENTS

Admissions

NTU welcomes applications from qualified individuals all over the world.
Please visit *http://www.ntu.edu.sg/admissions* for admission details and contacts.

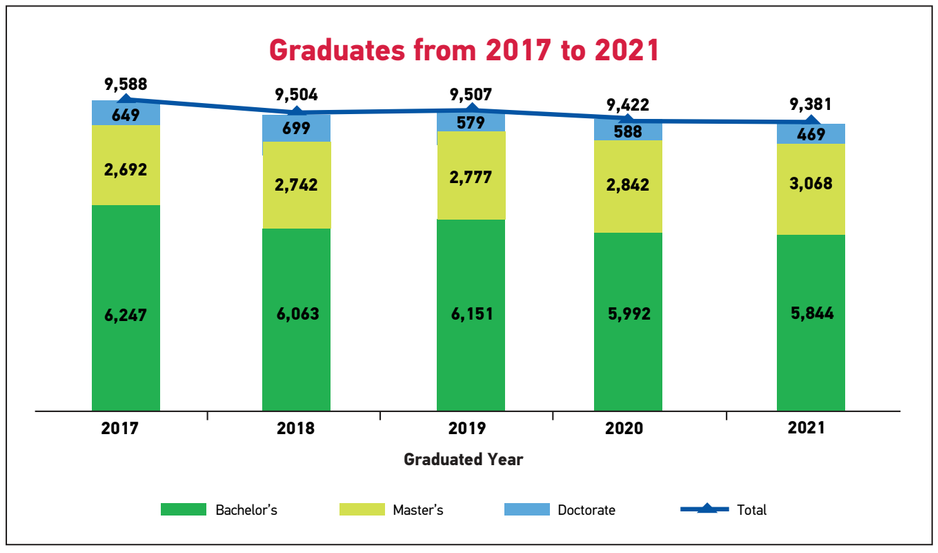
Enrolment by college (AY2021-22)

College	Undergraduates[2]	Graduate Students[2]		Graduate Diploma[2]
		Coursework	Research	
Engineering	11,673	1,656	1,489	-
Science	3,033	153	471	-
Nanyang Business School	4,027	1,193	61	-
Humanities, Arts & Social Sciences	4,720	1,316	340	-
Medicine	736	-	102	53
NIE	682	1,344	190	498
Others[1]	-	352	295	-
Total	24,871	6,014	2,948	551

[1] Others include the Graduate College, Interdisciplinary Graduate School, Nanyang Technopreneurship Centre and S Rajaratnam School of International Studies.

[2] There are 797 part-time undergraduate students; a total of 53 graduate diploma, 543 graduate research and 1,995 coursework students take part-time programmes

Figures are correct as at 6 Sep 2021



Student life

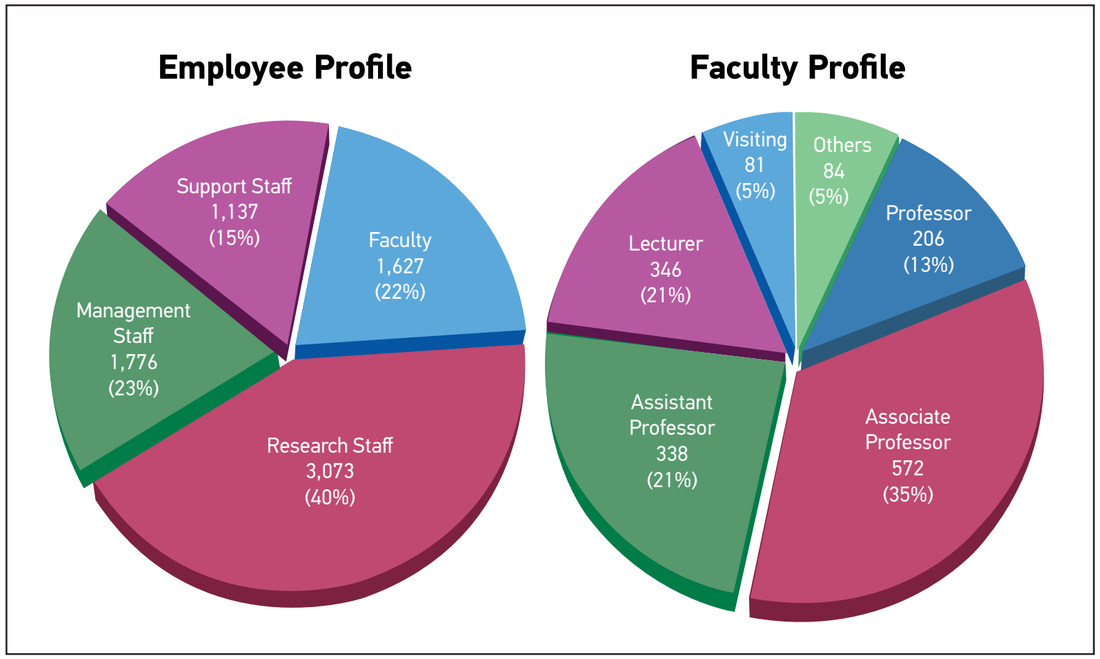
- Emphasis on student wellbeing, co-curricular learning and a vibrant campus experience
- Transition and Orientation Programme for all freshmen
- Residential education at all halls of residence
- About 135 student organisations in NTU
- Active student engagement with the larger community
- University-wide student leadership development programme
- University-wide Student Experience Surveys that consistently show students are generally satisfied with their NTU experience

Student services

- Psychological and professional counselling
- Career services
- Sports and recreation
- Student clubs and communities
- Health care
- Medical and insurance schemes
- On-campus and heartland shuttle bus services
- Immigration
- Student jobs
- Accessible education services (for students with special needs)
- One Stop @ SAC (Student Activities Centre)

FACULTY AND STAFF

NTU has a total faculty and staff population of 7,613* (as at 1 Jul 2021).



**Figures exclude adjunct faculty*

Interdisciplinary faculty

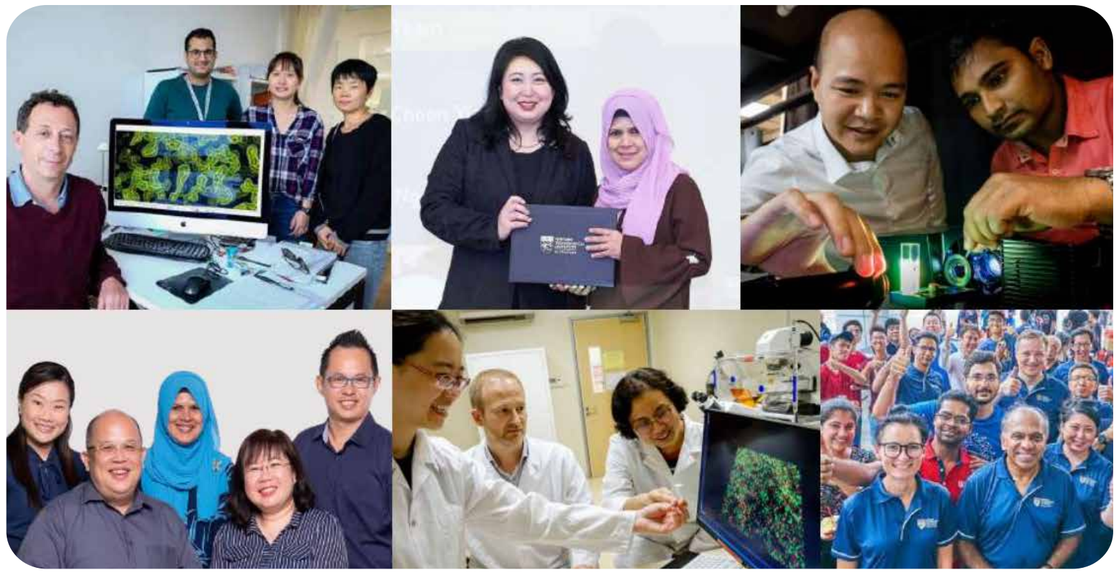
NTU has world-renowned scientists and scholars in key technological fields that strengthen its profile. Eminent professors take up leadership appointments at NTU's colleges, schools and research institutes or as full-time faculty to develop research themes of global importance. They include more than 120 joint faculty appointments to drive high-impact interdisciplinary research and education.

Over the years, the distribution of faculty across NTU's colleges reflect its evolution from an engineering-dominant university to one with expertise across a broad spectrum of disciplines.

Talent development and recognition

NTU's commitment to recruiting and retaining top-quality faculty includes awarding President's and Provost's Chairs to outstanding senior and mid-career/junior faculty. As of 2021, NTU has awarded more than 70 chair professorships under this new initiative. New mechanisms have also been established to create named professorships. Faculty and staff are cultivated through a leadership academy, mentoring and leadership training programmes such as LEAD@NTU, as well as Women@NTU, a bottom-up initiative. The distinguished services of post-tenure faculty are recognised through Emeritus Professorship.

Chaired by the NTU President, the Academic Council, made up of all faculty members, provides faculty a platform to give input and feedback on academic matters through an elected Senate and Advisory Board.



ALUMNI

- More than 266,000 university alumni representing 156 nationalities

- 52 overseas alumni associations: **Australia**, **Brunei**, **Cambodia**, **China** (Anhui, Beijing, Chongqing, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hong Kong SAR, Hubei, Hunan, Inner Mongolia, Jiangsu, Jiangxi, Jilin, Liaoning, Ningxia-Qinghai-Xizang, Shanxi, Shaanxi, Shandong, Shanghai, Sichuan, Tianjin, Xinjiang, Yunnan and Zhejiang), **Germany**, **Gulf Cooperation Council**, **India** (Northern, Central and Southern), **Indonesia**, **Japan**, **Malaysia**, **Myanmar**, **Philippines**, **South Korea**, **Switzerland**, **Taiwan**, **Thailand**, **United Kingdom**, **United States of America** (USA-East and USA-West) and **Vietnam** (Hanoi and Ho Chi Minh City)

- 25 Overseas Alumni Circles in locations such as **Russia**, **Egypt**, **Brazil**, **Canada**, **France** and **New Zealand**

More than nine in ten NTU students are employed within six months of graduating. They work in diverse sectors from engineering and business to public administration and education.

LYON, OUR MASCOT

"Lyon the lion" symbolises the University's values of strength, courage and fearlessness. As the embodiment of the NTU spirit, it not only brings the University community together, but also inspires student teams to give their best performance at inter-varsity and other competitions. Designed by an NTU student, it made its debut in August 2013.

THE NTU FLOWER

Dendrobium Nanyang is a pristine white orchid with a burst of purple at the heart of the bloom, signifying pure energy and a caring heart. The hybrid was created by students and teachers of Temasek Primary School as part of an orchid hybridisation programme developed at NTU's National Institute of Education. The exquisite white petals represent the qualities that embody the university spirit – passion, tenacity, fortitude, leadership, innovation and entrepreneurship.

Prepared by Institutional Statistics-Student & Academic Services Department and Corporate Communications Office