### Country report on Nanyang Technological University

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In Singapore, the national focus on science and technology has been extremely strong and within the last decade this has also embraced the area of the computer and information technology. This has meant great emphasis on science education throughout the nation-state.

Reasons for Singapore’s successful inculcation of scientific and technological culture include the strong national commitment backed by technological, training and personnel resources in this field, an examination system throughout schools and higher institutions of learning with emphasis on science and technology, efforts to popularise science and technology outside the education system and strong links between industry and the training institutions.

This paper will deal primarily with science and technology training, research and activities outside the school system. My colleagues from the National University of Singapore, National Institute of Education, the Singapore Science Centre and the Science and Technology Board will join me in giving you an idea of the training, research and popularisation in science and technology in their institutions while I will deal very briefly with Nanyang Technological University’s activity in this area.

The official discourse articulates a vision of NTU as the MIT of Asia. NTU’s mission is to train leaders, professionals and entrepreneurs for Singapore and the region and to advance research and development in both academic and professional disciplines.

It offers undergraduate degree courses as well as postgraduate programmes by coursework and by research. The University has two campuses.

The Yunnan Garden Campus consists of six faculties:

School of Accountancy And Business
School of Applied Science
School of Civil and Structural Engineering
School of Electrical and Electronic Engineering
School of Mechanical and Production Engineering
School of Communication Studies

Its Bukit Timah Campus constituting the National Institute of Education (NIE) consists of:

School of Arts
School of Science
School of Education
School of Physical Education

**RESEARCH AND DEVELOPMENT**

To facilitate research and advanced training, various research institutes and centres of excellence are set up at the University. They include 16 institutes and centres based outside the Schools.
These are:-

- Gintic Institute of Manufacturing Technology
- NTU-CIDB Centre for Advanced Construction Studies (CACS)
- Entrepreneurship Development Centre (ENDEC)
- NTU-DIGITAL Network Technology Research Centre (CGIT)
- NTU-PWD Geotechnical Research Centre
- Robotics Research Centre
- NTU-CSP Centre for Signal Processing
- Asian Commerce and Economics Studies Centre (ACES)
- Centre for Accounting and Auditing Research (CAAR)
- Centre for Research in Financial Service (CREFS)
- Entrepreneurship Development Centre (IMARC)
- School of Accountancy and Business Research Centre (SABRE)

To encourage local and locally-based enterprises to carry out their R & D activities on campus where expertise of NTU staff and facilities are readily available and where students could be involved in such activities, the University has set-up an Innovation Centre which is a mini Science Park.

Research and development form an important part of the activities of the University. The University encourages its staff to do R&D work as well as provide consultancy services to industry and business in their areas of expertise. Funds are provided in the annual budget for staff to carry out approved research projects. Research fellows and other research staff are also appointed to spearhead and assist in research activities.

**SCHOOLS**

The Schools with a main emphasis on Science and Technology includes the Engineering Schools, the School of Applied Science and the School of Science (NIE). The School of Communication Studies has also placed strong emphasis on technology in its media production courses. The primary functions of the School of Mechanical & Production Engineering (MPE) are to train and educate professional mechanical and production engineers and to advance the state of knowledge in important mechanical and production engineering fields. The School currently has more than one hundred academic staff members and is organized into four Divisions to facilitate the coordination of various academic and research activities. These are the Division of Engineering Mechanics, Division of Thermal and Fluids Engineering, Division of Manufacturing Engineering, and Division of Systems & Engineering Management.

The School of Civil and Structural Engineering's (CSE) primary functions are to train and educate professional civil and structural engineers, and to advance the state of knowledge in important civil and structural engineering fields. The School has currently 85 academic staff members and about an equal number of technical and clerical staff.
To facilitate the coordination of various academic and research activities, the School is divided into three divisions:

Geotechnics and Surveying
Structures and Construction
Water Resources and Transportation

The School of Electrical and Electronic Engineering (EEE) was one of the three founding Schools with which Nanyang Technological Institute (now Nanyang Technological University) commenced its undergraduate courses in engineering, soon after it was set up in August 1981. The first batch of students to obtain the BEng (Electrical) degree graduated in 1985. The number of graduates has steadily increased over the years, from 194 in 1985 to 641 in 1996.

In addition to its undergraduate programme, the School now has postgraduate programmes leading to the MSc degree by course work and dissertation, and MEng and PhD degrees by research. The School aims to have about 25% of the total student enrollment as postgraduate research students.

The School of Applied Science was established in 1989 to offer specialized courses that meet the ever expanding needs of Singapore in the area of information technology. To cater to these needs, the School offered its first undergraduate course, Computer Technology, which has since changed its name to Computer Engineering.

While the Schools of Civil, Mechanical and Electrical Engineering offer traditional disciplines, the School of Applied Science sets out to define new and emerging paradigms for the 21st century. Currently, the teaching and research activities of the School take place within its following four divisions:

Computing Engineering (CE) Course administered by:
The Division of Computing Systems (CS)
The Division of Software Systems (SS)

Materials Engineering (ME) Course administered by:
The Division of Information Studies (IS)

The Computer Engineering course has been fully accredited by the Institution of Engineers, Singapore & recognized by the Professional Engineers Board of Singapore.

The Materials Engineering course has also been fully accredited by the Institution of Materials Engineers (UK), Institution of Engineers (Singapore) and recognized by the Professional Engineers Board of Singapore.
The School of Communication Studies offers a 4-year programme leading to a Bachelor's degree (with Honours) in Communication Studies.

It prepares students to design, manage and assess media and information systems to serve government, industry and the public in a rapidly changing communication environment. Students are required to complete a number of core subjects and prescribed electives in the first and second years of their study.

In the third and fourth years, they specialize in one of the following four divisions of the School:

1. Division of Journalism and Publishing
2. Division of Electronic and Broadcast Media
3. Division of Public and Promotional Communication; and
4. Division of Communication Research.

The Master of Mass Communication programme is designed for those planning a career or already working in the communication industry. A balanced curriculum challenges students to confront contemporary issues in media theory, research, policy, planning and management with an emphasis on Singapore and Asia. Course concentrations and individual subjects address the needs of those working in both the public and private sectors. The programme provides concentrations in:

1. Media Management and Marketing
2. Communication, Technology and Society
3. Public and Persuasive Communication

A thesis/project is required in which students apply the concepts and issues discussed in coursework. The aim of the programme is to prepare students for leadership positions in their chosen area in communication.

The School has established close links with the media and communication industries. Professional organizations such as the Singapore Press Holdings, Television Corporation of Singapore, Radio Corporation of Singapore, Singapore CableVision, Singapore Book Publishers Association, the Institute of Public Relations and the Association of Accredited Advertising Agencies are involved with the School through their representation on the Advisory Committee, sponsorship of scholarships and awards, assistance with the students' internship programmes and support for student activities.