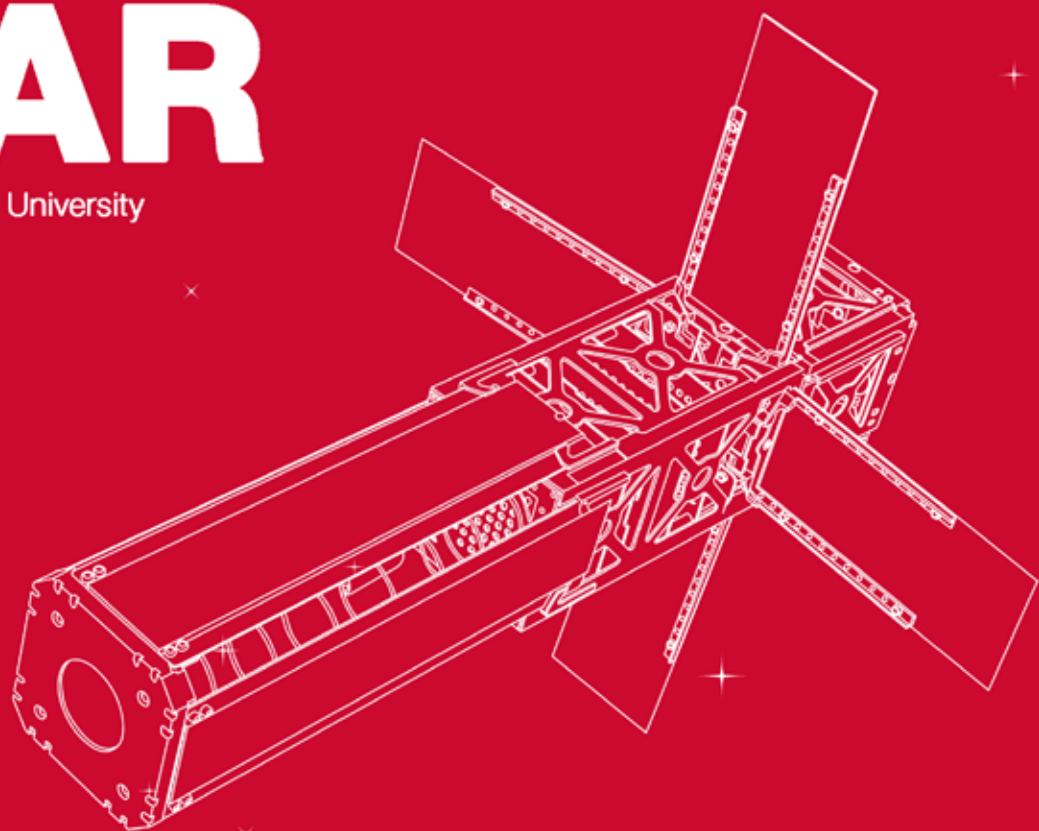


LEAP YEAR

Nanyang Technological University
Annual Report 2011



Vision and Mission

A great global university founded on science and technology, nurturing creative and entrepreneurial leaders through a broad education in diverse disciplines.

Contents

At a Glance 5

Chairman’s Message: On the Rise 6

President’s Message: The New NTU 8

Board of Trustees 12

University Leadership 14

Learning 16

- Undergraduate Education
- Graduate Education
- Student Experience

Discovery 30

- Research
- World-class Faculty
- Research Spotlight

Honours 44

- Senior Management and Faculty
- Graduate Students
- Undergraduates
- NTU and University Entities

Highlights 52

- Global Standing
- Leadership
- Education
- New Centres and Institutes
- Innovations
- Gifts to the University
- Alumni
- Campus Life
- Eminent Visitors
- Benefactors

Financial Review 60

- Corporate Governance
- Financial Statements

LEAP YEAR

NTU jumped 16 places to 58th position in the QS World University Rankings 2011, becoming the fastest-rising Asian university in the world's top 100 universities between 2010 and 2011. A melting pot of international award-winning scientists, young talents and eminent partners, NTU combines academic excellence with research that is useful to Singapore society and mankind. Well-positioned for the future, NTU is implementing the NTU 2015 roadmap to develop five Peaks of Excellence – Sustainable Earth, Future Healthcare, New Media, New Silk Road and Innovation Asia.

AT A GLANCE



3 Singapore campuses

16 halls of residence spread over **200** hectares at the Yunnan Garden campus (the largest campus in Singapore)

70 research institutes and centres



Ranked **58th** in the QS World University Rankings 2011

2013 — first intake at the Lee Kong Chian School of Medicine



Students from **83** countries

Faculty and researchers from **66** countries

Student attachment programmes with **139** institutions in **27** countries

Alumni across **121** countries



23,700 undergraduates

9,500 graduate students

3,600 faculty and researchers

156,800 alumni

99.9% of the Class of 2010 received a job offer within four months of graduation

80% of the Class of 2011 made a graduation gift (a record participation rate)



Over **S\$436.8 million** in competitive research grants won in **FY2010/11**

More than **S\$849 million** in funding for sustainability research since 2005

“We’ve improved our performance in established international rankings and have stayed relevant and competitive as a cosmopolitan university at the gateway between the East and the West.”



CHAIRMAN'S MESSAGE

ON THE RISE

What an exciting year it has been for NTU.

One milestone in 2011 was our leadership transition, during which Prof Bertil Andersson succeeded Prof Su Guaning to become NTU's third President. We are pleased that Prof Andersson came from within NTU, and that many other senior appointments were also filled from within the ranks.

This speaks of the breadth and diversity of our faculty. Looking ahead, we'll be even more proactive about the professional development of our faculty to ensure we have strong succession plans, especially for key positions at NTU. While we will continue to look externally to always ensure we hire the best, and for specialist skills we do not have, it is our goal that good succession planning and professional development will allow us to fill NTU's leadership needs primarily from within.

As a university, our aspiration remains unchanged – to have NTU as a global university of excellence. We've improved our performance in established international rankings and have stayed relevant and competitive as a cosmopolitan university at the gateway between the East and the

West. This has also allowed NTU to keep pace with global trends in education and research, and in many areas, we've moved ahead of the curve.

NTU continues to make advances in teaching. We're committed to giving students the best possible learning experience, and our undergraduates, in particular, will benefit from the many educational initiatives instituted in the past year. While a lot has been done, there is a lot more to be done. We will work steadfastly towards improving this aspect of NTU.

NTU's research scene is thriving, with numerous landmark projects and alliances that transcend traditional disciplinary boundaries. You could say the walls are coming down at NTU in more ways than one – this year also marks a new start for the campus as we take bold moves to transform it into a vibrant “univer-city” for tomorrow.

On a personal note, I'm glad that the bonds between NTU and the community at large have continued to deepen. We want to make sure that the university grows in such a way that there are no boundaries between NTU and the community that we serve. In

this regard, I hope to see NTU sharing its passions and concerns in a bigger way with the public at this lush garden campus.

In closing, I'd like to thank, on behalf of NTU's Board of Trustees, all those who have contributed to the university's advancement over the past year, in particular Prof Su Guaning, who served the university with distinction for nine years.

In building a world-class university, we've been helped immeasurably by our many partners in industry, higher education and research, as well as by passionate donors, alumni, faculty, staff and students. Thank you all for your efforts.

The pursuit of excellence is a ceaseless journey that cuts across ranks, disciplines and departments. With the rapid progress made by the university, I look to the future with confidence that NTU will achieve even greater heights in research and education.

MR KOH BOON HWEЕ
Chairman, Board of Trustees
Nanyang Technological University



“NTU has consistently been ranked among the world’s top 100 universities. Noteworthy in the last academic year was our quick ascent up various reputable global yardsticks.”

PRESIDENT’S MESSAGE

THE NEW NTU

The last academic year was a remarkable “leap year” – one that saw us reap the harvest of our ventures in higher education and soar to new prominence on the global stage.

Bracing ourselves for new challenges, we revamped the undergraduate curriculum, started a medical school, entered new realms of interdisciplinary knowledge and showcased our technological might as a hub of innovation.

Many of these initiatives support our ambitious five-year strategic plan, NTU 2015, which maps out how NTU will become a great global university by 2015 through setting new benchmarks in our areas of strength, from sustainability to future healthcare and new media.

Like a living organism, NTU grows and adapts to its changing environment. We have kick-started a new phase of campus development to transform the university grounds – incidentally, the largest in Singapore at 200 hectares – into a mini-city over the next 15 to 20 years. This major undertaking supports our strategic plan and will be guided by the principles of interactivity, sustainability and integration.

I am pleased to note that features of the blueprint have already been incorporated to support interdisciplinary activities, student life and entrepreneurship.

A Great Leap Forward

NTU has consistently been ranked among the world’s top 100 universities. Noteworthy in the last academic year was our quick ascent up various reputable global yardsticks.

In the QS World University Rankings 2011, NTU jumped 16 places to 58th position, making us the fastest-rising Asian university amongst the world’s top 100 universities between 2010 and 2011.

In the annual Nature Publishing Index 2011 Asia-Pacific report, which keeps track of research articles in the prestigious *Nature* group of journals, NTU leapt 13 spots to 33rd position among the most prolific research institutions in the region.

For the eighth straight year, the Nanyang MBA programme was rated Singapore’s top MBA programme and among the best in the world by *The Economist*. In accounting research,

we are tops in Asia, according to a ranking by Brigham Young University. Our engineering college is the 5th most cited worldwide with a research output among the top three universities globally. There is indeed strong industry and peer recognition of our work.

External validation also came from the Quality Assurance Framework for Universities external review panel, which declared NTU to be “one of the world’s fastest-moving universities”. In its final report, the International Academic Advisory Panel highlighted the “remarkable progress” NTU had made in becoming a world-class research-intensive university.

These are testimony of our international reputation and standing on multiple fronts and show NTU is on track to become a great global university.

Future Medicine

Beginning a journey of great promise, we started a joint medical school with Imperial College London, the world-renowned standard bearer for medical education. This pioneering tie-up, a first for Imperial College, has borne

PRESIDENT'S MESSAGE

fruit with a new satellite campus taking shape, a bold research strategy in place, and key faculty recruitments underway to take the school to the international frontline.

The school builds on the strengths of Imperial and NTU to mould a new generation of caring doctors and clinician-scientists, who will drive translational clinical research for better patient outcomes.

Within months of its establishment, the school received a record gift of S\$150 million from the Lee Foundation, which amounts to S\$400 million after government matching. The school will be named after its benefactor, Tan Sri Dato Lee Kong Chian, a man known for his generous contributions to education and society. The school has attracted the interest of Singapore's students, and I look forward to welcoming the first 50 students in August 2013.

Strides in Education

The fast-changing global workplace demands versatility, creativity, social skills and cultural intelligence. With this in mind, we revamped our undergraduate curriculum to give NTU graduates the edge in tomorrow's working world. The extensive changes are also geared towards nurturing attributes such as an upright character, smart leadership and a strong social conscience.

Among the highlights of the revamp is the Renaissance Engineering Programme bridging engineering, business and the liberal arts. Designed

for aspiring CEOs and CTOs, it is now one of the most sought-after undergraduate offerings among top students in Singapore.

Multidisciplinary enrichment, global experiences and the development of vital life skills will remain major pillars of our educational approach. I am pleased to note that employers think highly of NTU graduates – 99.9% of the Class of 2010 received a job offer within four months of graduation.

In graduate education, we started a record number of joint Master's and PhD programmes with top overseas partners and launched a new interdisciplinary graduate school.

Research Highs

NTU was behind many of the year's research successes. Stretching the frontiers of science and exploration, we catapulted into space with the launch of X-SAT, Singapore's first indigenous satellite, which has been helping scientists observe environmental changes.

NTU researchers also unveiled a smart humanoid, robotic "fingers" for a scarless way to remove stomach tumours, a new technique that doubles the efficiency of computer chips, and novel and cost-effective solutions to our energy and water woes, among other innovations.

Research at NTU also received a fillip with a record number of high-impact publications and funding awards, including a major competitive research grant from the National Research Foundation for the Centre

for Electromobility, a partnership with Technical University of Munich in sustainable transportation. The growing impact and relevance of our research is evident – NTU's share of external competitive research funding awards increased more than sixfold over the last five years. This highlights the major role we play in fuelling Singapore's drive for research and innovation.

Bringing in the Best Minds

Concurrently with my appointment to the NTU presidency in July 2011, a new leadership team was formed to drive the directions and priorities under the NTU 2015 plan. We appointed Vice Presidents for Research and International Affairs, as well as new Associate Provosts to oversee important areas such as student life and faculty affairs.

We are pleased that Prof Stephen Kevin Smith, a leading figure in British healthcare reform and the Principal of Imperial College's medical faculty from 2004 to 2010, has come on board to head our medical school and lead our research enterprise as Vice President of Research.

We also welcomed other internationally-acclaimed scientists, among them molecular biologist Prof Stephan Schuster, microbiologist Prof Staffan Kjelleberg, pioneer of dye-sensitised solar cells Michael Grätzel (who chairs the Scientific Advisory Board of the Energy Research Institute @ NTU), and plant biochemist Prof James Barber from Imperial College London, adviser of our newly-opened Solar Fuels Laboratory, a first in Asia.

We were clearly the university of choice for the lion's share of the brightest young faculty who came to Singapore through the National Research Foundation's (NRF) elite young investigator scheme. In 2011, half of these fellows chose NTU as the place to conduct their research and since the programme started in 2007, 20 out of 38 NRF fellows have chosen NTU over other Singapore institutions. In 2011, we awarded Nanyang Assistant Professorships, NTU's elite early career awards, to seven outstanding young researchers selected from a pool of 418 international applicants. NTU is fast becoming the institution of choice for bright young researchers globally.

Primed for Success

We now have a critical mass of top faculty who stretch our students and inspire them to new heights. The students get to work in cross-disciplinary teams to solve multi-faceted problems in the real world.

To fully realise our vision of excellence, we have revamped our academic functions and structures, and are creating a service-minded administration that can fully and innovatively support all the advances that are taking place across the university.

I am pleased to note that a very strong culture of giving has taken root. A record-breaking 80% of the Class of 2011 made a gift to NTU. Their gesture benefits future generations of NTU students in helping to ensure that those with financial difficulties do not miss out on a quality education. More



faculty and staff are also giving back to help fulfil the aspirations of the next generation.

I would like to thank all those who have shared their expertise, ideas and support in the past year, especially our industry and academic partners, donors, and the NTU Board, as well as the entire NTU community. I would especially like to thank Prof Su Guaning, President Emeritus of NTU, for the privilege of building on the solid foundation that he has laid for this great university.

The NTU of today is a vibrant hub for learning and a hotbed for research at the confluence of the most important disciplines. As the President of this university, I cannot imagine a more exciting place to be.

Great challenges and greater opportunities lie ahead. One of our goals is to turn research investment into innovation and this will be a major effort in the coming year.

In undergraduate education, we are working hard to implement the recommendations of the Blue Ribbon Commission to revamp the curriculum in line with the expectations of a high-quality university. NTU graduates, Singapore's future leaders, will be ready for the demands of the 21st century.

As this is my first year as President of NTU, I am especially grateful for the support and cooperation of the members of the new management team, who are fully committed to furthering the cause of higher education and research. We are ready to take NTU to new heights and I look forward to seeing NTU rise further as a premier global university.

PROF BERTIL ANDERSSON
President
Nanyang Technological University

BOARD OF TRUSTEES

(As at 31 July 2011)



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Chairman
Sunningdale Tech Ltd
Yeo Hiap Seng Ltd



Mr Alwi Bin Abdul Hafiz
Managing Director, ASEAN
BSI Group Singapore Pte Ltd



Mr Edmund Cheng
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Deputy Managing Director
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Chairman
Singbridge International
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Chairman
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Research



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Imperial College London



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Mr Wong Yew Meng
Board Member
People's Association



Mr Ernest Wong
Chairman
Fullerton Financial Holdings Pte Ltd



Prof Alexander JB Zehnder
President and Founder
Triple Z Ltd



Prof Bertil Andersson*
President
Nanyang Technological University

** Following the end of Prof Su
Guining's term as President of NTU,
Prof Bertil Andersson succeeded him
on the NTU Board of Trustees.*

UNIVERSITY LEADERSHIP

Senior Management Team



Prof Bertil Andersson
President

Prof Andersson first became Provost in 2007, where he helped to strengthen NTU's reputation as one of the fastest-growing research-intensive universities in the world. He was installed as NTU's third President on 1 July 2011. He was formerly President of Linköping University, Sweden, from 1999 to 2003, and the Chief Executive of the European Science Foundation from 2004 to 2007. As the man at the helm of the European Science Foundation in Strasbourg, France, his last post before joining NTU, he consolidated research efforts across 30 European countries. A world-renowned plant biochemist with a longstanding association with the Nobel Foundation, where he had also chaired its Chemistry Committee, Prof Andersson has pioneered research on the artificial leaf, a promising area of sustainable energy research that uses sunlight to produce clean, low-cost sources of energy. He is part of a global league of leading scientists, joining 16 Nobel Prize winners among others since 1921 who have been awarded the Wilhelm Exner Medal for shaping the world through research.



Prof Freddy Boey
Provost

Before assuming the role of Provost, Prof Boey served as the Chair of NTU's School of Materials Science & Engineering from 2005 to 2010, leading its transformation into one of the world's largest materials engineering institutions. A dedicated educator and administrator, he also has a sterling track record of breakthrough commercial applications that have given the "made in Singapore" label pride of place on the global stage. In the three years before he became NTU's Provost, he had won about S\$36 million in competitive funding for research, including a S\$10 million individual grant to develop fully biodegradable cardiovascular implants for hole-in-the-heart conditions. Prof Boey has filed 25 original patents with NTU, the majority of which have been licensed. These patents have resulted in five spin-off companies, formed to license his various life-giving biomedical solutions. Not just NTU's role model for research, education and enterprise, Prof Boey actively champions the marriage of all three on campus.



From left: Prof Kam Chan Hin, Prof Lam Khin Yong, Prof Angela Goh, Assoc Prof Kwok Kian Woon, Prof Er Meng Hwa, Prof Peter Rainer Preiser and Prof Stephen Kevin Smith

The other members of the senior management team are:

Prof Lam Khin Yong
Chief of Staff

Prof Er Meng Hwa
Vice President (International Affairs)

Prof Stephen Kevin Smith
Vice President (Research) and Dean, Lee Kong Chian School of Medicine

Prof Angela Goh
Associate Provost (Faculty Affairs)

Prof Peter Rainer Preiser
Associate Provost (Graduate Education)

Assoc Prof Kwok Kian Woon
Associate Provost (Student Life)

Prof Kam Chan Hin
Associate Provost (Undergraduate Education)

Deans of Colleges

Prof Gillian Yeo
Interim Dean, Nanyang Business School

Prof Janie Fouke
Dean, College of Engineering

Prof Alan Chan
Dean, College of Humanities, Arts, & Social Sciences

Prof Ling San
Dean, College of Science

Heads of Autonomous Institutes

Prof Lee Sing Kong
Director, National Institute of Education

Ambassador Barry Desker
Dean, S Rajaratnam School of International Studies

Prof Kerry Sieh
Director, Earth Observatory of Singapore

Prof Staffan Kjelleberg
Director, Singapore Centre on Environmental Life Sciences Engineering

A CAMPUS TO NURTURE

Versatility. This is a quality we nurture through a flexible, broad-based curriculum, coupled with a vibrant campus life and exposure to global environments. Besides learning to think across disciplines, our students acquire hard and soft skills, such as creativity, cultural intelligence, networking skills and leadership ability. Plugged into the global scene and well-oriented to the new economy, they are ready to make an impact after graduation.



UNDERGRADUATE EDUCATION



NTU graduates are equipped to excel in the new innovation-driven economy

An education at NTU offers interdisciplinary knowledge and a global perspective, giving students the tools to succeed in an increasingly complex, borderless world. Besides acquiring the core tenets of their chosen fields and an understanding of broad issues, they also develop critical thinking, reasoning and communication skills that can be applied to a range of professional roles.

Our approach has received global affirmation. In February 2011, the Quality Assurance Framework for Universities report concluded that NTU had made great progress in

becoming a world-class research-intensive university while staying true to its key mission of providing a strong foundation in undergraduate education.

NTU produces graduates that meet the needs of industries and businesses. A graduate employment survey of the Class of 2010 found that 90.5% secured employment within a month of graduation **while 99.9% received a job offer within four months of graduation.**

More top students are benefiting from making NTU their choice of university. In AY2010, a bumper crop of 133 freshmen received the prestigious

Nanyang Scholarship awarded by the university. Thirteen of them were also accepted into the CN Yang Scholars Programme for science and engineering talents.

“The working world of the future will require ‘T-shaped’ professionals with in-depth knowledge of one discipline and a broad knowledge base in adjacent areas... These professionals are numerate and adept at technology, even as they are good managers, problem-solvers and communicators.”
– Prof Bertil Andersson, NTU President

Preparing Students for the Knowledge Economy

In AY2010, NTU began implementing the recommendations of its Blue Ribbon Commission Report on Undergraduate Education. Unveiled in March 2011, it sets out a new paradigm for learning through a revamped curriculum with a better balance of depth, breadth and free electives, with fresh opportunities for students to study, research, work and spend some time overseas. Among the highlights:

- A **broader, more flexible learning experience** with at most 70% of courses from the core discipline and at least 30% of courses from other fields. Overall course content has also been reduced by up to 14%. Not only does this allow for more group-based and self learning, it lets students choose courses according to their interests.
- A compulsory core course in **Environmental Sustainability** helps students understand the challenges related to this important field.
- The new curriculum also offers a **broader selection of electives**, including cross-disciplinary modules such as Liberal Studies and Natural Hazards and Society, as well as a course on Entrepreneurship.
- Close to **20 new academic programmes**, including double degree offerings, have been added, covering a range of emerging growth areas.
- **New minors** that have been introduced to add interdisciplinary breadth cover fields such as energy, sports science, and environmental and urban studies.
- NTU is committed to giving students a range of international experiences. Having achieved our target to have at least 50% of each student cohort attend **overseas learning, research and work programmes**, NTU is now working towards a more ambitious target of 70%.
- Integrating engineering science, business management and liberal studies, the **Renaissance Engineering Programme** is a unique dual-degree offering with a strong overseas component, aimed at grooming future

CEOs and CTOs. The programme offers two degrees – a Bachelor of Engineering Science and a Master of Science in Technology Management – in just 4.5 years, with a year spent at a top overseas university. The first cohort will spend a year at the University of California, Berkeley. The programme has attracted many high achievers and accepted its first cohort in AY2011/12.



At the Lee Wee Nam Library Learning Commons and other spaces across the campus, new study configurations and technologies help students to learn more effectively



The Renaissance Engineering Programme bridges engineering, business and the liberal arts, offering the breadth of knowledge that future CEOs and CTOs will need



Singapore's newest medical school marks the first time that Imperial College London is delivering an undergraduate course outside the United Kingdom.

The Lee Kong Chian School of Medicine

Announced in September 2010, Singapore's newest medical school is making good progress towards welcoming its first intake of 50 students in August 2013. It marks the first time that Imperial College London is delivering an undergraduate course outside the United Kingdom.

The school seeks to **enhance excellence in medical education, healthcare and science in Singapore** and has received significant support from the community. In January 2011, it was named the Lee Kong Chian School of Medicine after Tan Sri Dato Lee Kong Chian in recognition of a S\$150 million gift from the Lee Foundation, which amounts to S\$400 million after government matching.

The school will combine Imperial's renowned medical programme with

NTU's strengths in engineering and business. It will be based at **two locations**: NTU's Yunnan Garden campus and the new Novena campus being developed next to Tan Tock Seng Hospital. A research strategy group was established in June 2011 and recruitment of top faculty is underway.

Other Highlights

To encourage more undergraduates to pursue research, the **URECA (Undergraduate Research Experience on CAmpus)** programme, which offers access to 1,200 interdisciplinary projects, is now open to a larger cohort of potential First Class Honours students. Since this change in AY2010, there has been a 37% rise in the participation rate.

Students of the English Division's Creative Writing minor programme can look forward to learning from

literary luminaries under the **Singapore Writing Residencies** scheme.

Launched in April 2011, this three-year, S\$1.5 million programme is co-funded by the National Arts Council.

In 2011, the pioneer class of the **Bachelor of Engineering in Information Engineering and Media** programme graduated. First offered in 2007 by the School of Electrical & Electronic Engineering, the multidisciplinary, inter-college programme gives engineers a stronger understanding of the creative design process. Graduates have been employed by leading companies and organisations such as IBM, Oracle, SingTel, Lucasfilm Singapore, MediaCorp, Singapore Press Holdings, the Government of Singapore Investment Corporation and major banks.



Part of the medical school will be housed in a historic building at the Novena campus, which is in a prime medical district to facilitate students' integration into clinical settings

GRADUATE EDUCATION



NTU is on track to reach its target of 3,500 PhD students by 2015

NTU's graduate programmes experienced another year of strong growth, not only in terms of academic choices and enrolment but also in the quality of the student intake.

Quality, Diversity and Standards

AY2010 saw continuing upward trends in student quality, enrolment and funding.

- **PhD student enrolment** at NTU rose from 2,085 in AY2007 to 3,009 in AY2010, a 44.3% increase. This has enhanced NTU's vibrant research culture. With PhD enrolment growing steadily over the last three years, the university is on track to reach its 2015 target of 3,500 PhD students.
- **Research scholarship block funding** for NTU from Singapore's Ministry of Education increased from S\$42.6 million in FY2008 to S\$63.2 million in FY2011. This 48% rise has resulted in an average intake of about 420 NTU research scholars from AY2008 to AY2010.
- NTU has broadened the **global diversity** of its PhD population. The Singapore International Graduate Award, a collaboration with the Agency for Science, Technology & Research, has attracted international students to pursue full-time PhDs here. In AY2010, students from 33 non-traditional countries joined NTU through the programme, up from 12 in AY2009. The Summer Research Internship Programme also creates awareness amongst international students through an eight-week research internship at NTU. There were 618 applications for the university's June 2011 intake, a threefold increase from AY2009. NTU's PhD population now has representatives from 36 countries.
- **Student quality** has also improved. From AY2007 to AY2010, admission scores of matriculated PhD students at the 90th



The proportion of PhD students admitted with a First Class Honours degree rose to 51% in AY2010

percentile averaged 1,370 to 1,400 for GRE, 760 for GMAT and 98.36 for GATE, comparable with some Ivy League universities. The proportion of PhD students admitted with a First Class Honours degree rose from 48% in AY2007 to 51% in AY2010.

- **Graduate research standards** have also been raised. NTU's postgraduate research subscription rate (a measure of total applications against matriculated students) rose from 3.83 in AY2007 to 5.27 in AY2010, up 38%. This indicates greater selectivity in admissions. The postgraduate coursework subscription rate showed the same trend, up from 3.88 in AY2007 to 5.87 in AY2010, a 51% increase. NTU's postgraduate research yield rate (a measure of

matriculated students against total offers) rose from 68% in AY2007 to 76% in AY2010. This indicates a greater take-up rate for NTU's programmes.

- NTU's PhD graduates continue to be **highly employable**. 93.5% of the Class of 2010 were employed on a full-time basis within six months of receiving their degrees, while 98.2% had received job offers.

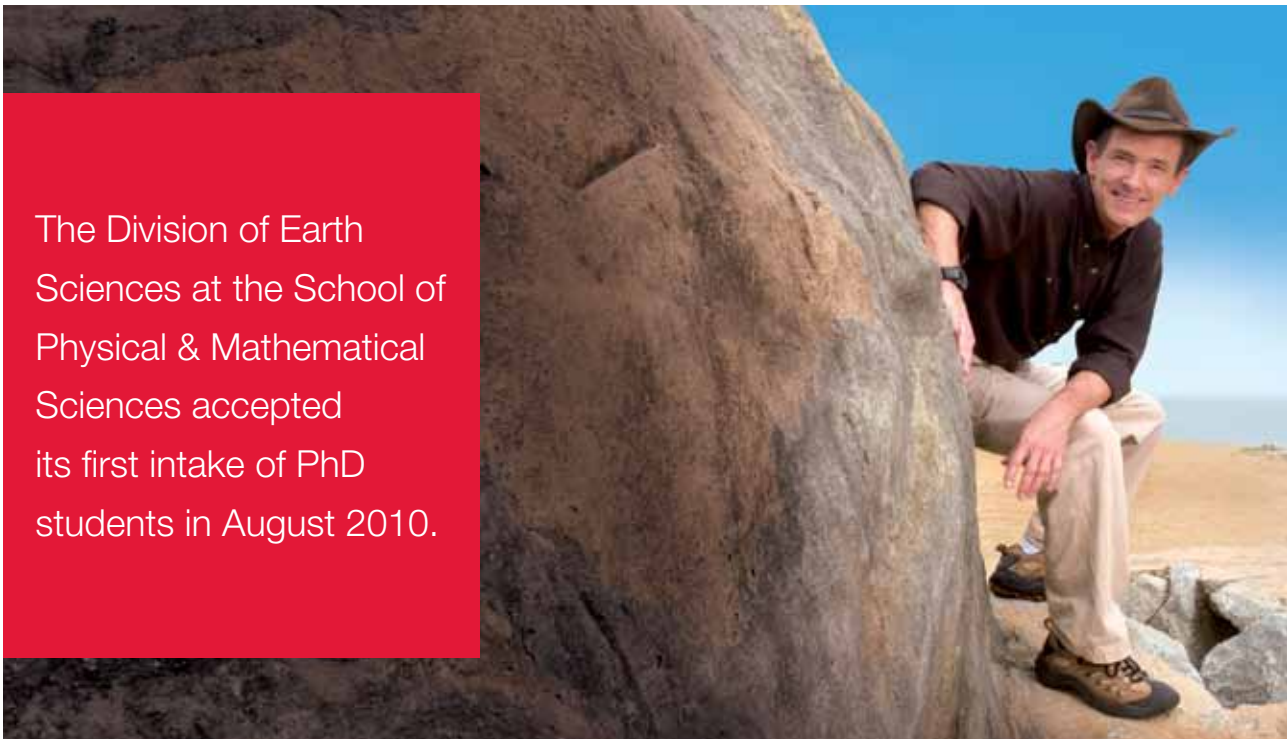
Other Highlights

NTU's **Nanyang MBA** continues to draw accolades. In September 2010, *The Economist* ranked it 69th in a global survey of full-time MBA programmes. This makes it sixth in Asia and number one in Singapore. In January 2011, the programme came in 33rd on *The Financial Times*' Top 100 Global MBA

Rankings. Nanyang MBA alumni also have the highest average salary among those who attend Singaporean MBA programmes, with an average salary of US\$104,592.

NTU's **Interdisciplinary Graduate School** seeks to strengthen interdisciplinary research in programmes related to the Five Peaks of Excellence. The first cohort of interdisciplinary PhD students was admitted in AY2011. The goal is to have 30% of the university's PhD students educated through the school by 2015.

The NTU **Industrial Postgraduate Programme** was developed with the support of Singapore's Economic Development Board to offer extensive industry-relevant exposure to PhD students. The first intake was in AY2011.



Renowned earth scientist Prof Kerry Sieh, Director of the Earth Observatory of Singapore at NTU

New **joint and dual graduate programmes** between NTU and other leading universities leverage complementary strengths in key research areas. In AY2010, the university saw the first intake of NTU students enrolled with:

- Carnegie Mellon University (dual PhD programme in Engineering)
- Technion-Israel Institute of Technology (joint PhD programme in Materials Science and Engineering)
- University of Technology of Troyes (joint PhD programme in Engineering)

NTU also established **new programmes** with:

- Agency for Science, Technology & Research (joint PhD research programme in Immunology)
- Technical University of Munich (joint PhD programme in Electrical & Electronic Engineering)
- Paris Institute of Technology (joint PhD programme in Electrical & Electronic Engineering)
- Hebrew University of Jerusalem (joint PhD programme in Environmental Life Sciences)
- University of Southampton (joint PhD programme in Optoelectronics and Chemistry)
- Technical University of Darmstadt (joint PhD programme in Visual Computing)

- Graz University of Technology (joint PhD programme in Visual Computing)

The **Division of Earth Sciences** at the School of Physical & Mathematical Sciences accepted its first intake of PhD students in August 2010.

In AY2010, together with the University of Warwick, NTU launched a **double Masters programme** covering cross-disciplinary approaches to global issues, including economic, political, social and strategic influences. The inaugural batch of students joined the S Rajaratnam School of International Studies in AY2011.

NTU and the Geneva-based International Air Transport Association tied up to launch the joint **Advanced**

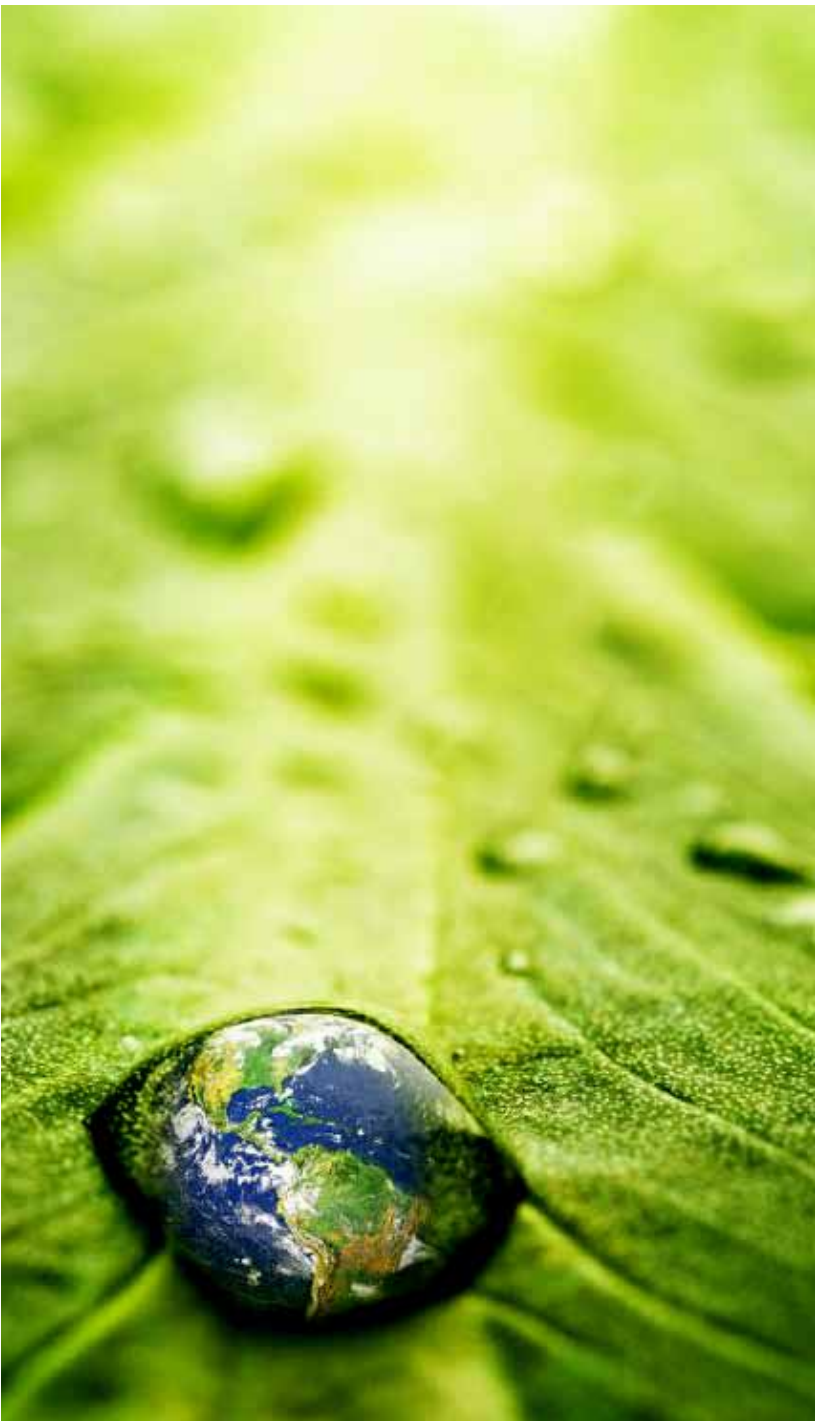
Management Programme in Air Transport, which allows participants to earn credits towards the Nanyang Executive Master of Business Administration programme at NTU. With its focus on aviation management, the course will develop aviation leaders for the world.

The Nanyang Business School lends its expertise to the **Master in Business Studies (Asian Business)** programme, which includes a segment with courses and workshops at NTU for graduate students of University College Cork, Ireland.

NTU's **Master of Arts in Contemporary China** programme celebrated its fifth anniversary in August 2010 with the establishment of the Wong Wai Ling Scholarship.

In January 2011, NTU's popular **Mayors' Class** welcomed its 1,000th graduate. The Mayors' Class also received its most senior cohort of Chinese officials and administrators in March 2011. This milestone not only demonstrates the strength of the university's China-focused masters programmes, but also highlights NTU's unique role as a global hub of the East and the West.

The Nanyang Business School signed new agreements for the exchange of MBA students with McGill University, Università Commerciale Luigi Bocconi, University of Michigan and Northwestern University.



The Interdisciplinary Graduate School will bring together multiple academic perspectives related to sustainability, new media and healthcare

Inter-hall competitions like this dance fiesta add to the vibrancy of life at Singapore's largest residential campus

LEARNING

STUDENT EXPERIENCE



More e-learning opportunities with 80% of lectures recorded and placed online

A complete learning experience is one that not only imparts life skills but also balances academic and social pursuits. NTU has worked to enhance this through new campus developments and student-centric initiatives. At the same time, NTU students take ownership of their experience, actively contributing to university and community causes such as raising funds for disaster relief.

Campus Developments

Unveiled in February 2011, NTU's **Campus Master Plan** aims to enhance learning, teaching and research by transforming the Yunnan Garden campus. Spanning 15 to 20 years, it complements the NTU 2015 strategic plan and the Blue Ribbon Commission Report on Undergraduate Education. Guided by sustainability principles, the plan seeks to turn NTU into a mini-city with natural green corridors. It will promote cross-varsity interaction and support learning needs to come. Many of its recommendations were implemented in AY2010, with more to follow.

- NTU is in the first phase of converting its existing 108 tutorial rooms and 29 seminar rooms into **classrooms of tomorrow**. These next-generation learning spaces will feature LCD screens, wireless access, white-board mounted walls, AV facilities and customised tables and chairs to facilitate collaborative learning.

- Beginning operations in August 2010, the **Centralised Command Centre for Lecture Recording** has enabled 80% of all lectures delivered on campus to be recorded. This is an improvement from 65% of the total number of courses in 2009. The service has greatly benefited students, who can learn anytime, anywhere.
- NTU's new, centrally located **Student Activities Centre** and **Global Lounge**, with their extended opening hours, also add to the learning and recreational spaces available to the student body. Completed in mid-2011, both are popular with students.
- NTU's thriving entrepreneurial scene has been enriched through the refurbished **Innovation Centre**. Opened in June 2011, it is a place for student-entrepreneurs, with four innovation laboratories, incubation offices, an auditorium and a student-run café, Pitchstop. Students have access to mentors and start-up grants.
- Residential offerings have been enhanced and new living and learning spaces are being planned. Construction of NTU's second **Graduate Hall** began in October 2010; it will be completed by mid-2013. A multi-purpose **Learning Hub** near the South Spine is scheduled to be completed in 2014.
- As the **2010 Youth Olympic Village**, NTU hosted 3,600 international athletes and officials in August and

Unveiled in February 2011, NTU's Campus Master Plan aims to enhance learning, teaching and research by transforming the Yunnan Garden campus. Guided by sustainability principles, the plan seeks to turn NTU into a mini-city with natural green corridors. It will promote cross-varsity interaction and support learning needs to come.



The new Campus Master Plan sustains and enriches NTU's natural setting, best described as a "university in a park"

September 2010. A number of living and recreational facilities on campus were refurbished and upgraded, to the benefit of students. Among these were 10 halls of residence and the graduate hall, as well as the National Institute of Education, which was the Village Square, and NTU's Sports & Recreation Centre, which now boasts several Olympic-training-standard facilities.

Student-centred Initiatives

AY2010 saw the strengthening of services related to pastoral care and academic advice and counselling, as well as career guidance.

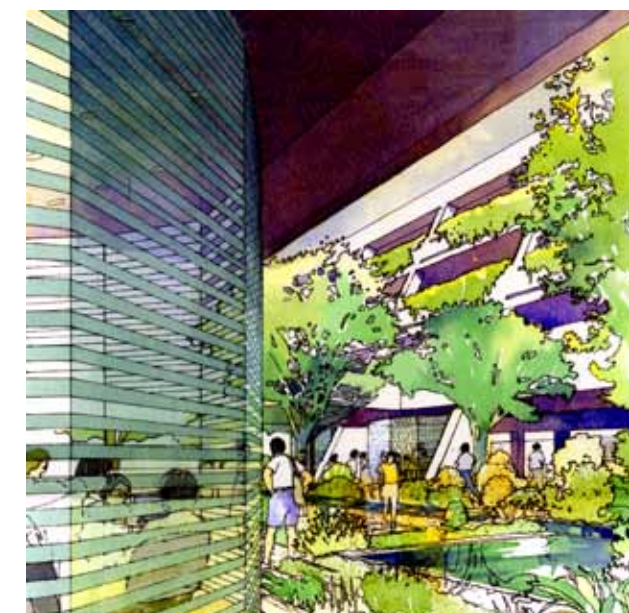
- The Career & Attachment Office continued to refine its four-stage approach to help students make career decisions. Its **academic advising and career guidance** programmes also help students with their internship and attachment needs. The office has an

active alumni mentorship and advice programme. In February 2011, NTU held its first fully interactive, 3D virtual career fair, iFair. The main NTU Career Fair 2011 was also Singapore's largest varsity career fair with 175 companies offering 4,500 positions.

- New plans for **enhancing hall life** have also been implemented. A Personal Development Programme was piloted in AY2010 and will gradually be expanded to encompass more students, residential and otherwise.



Pedestrian areas with shops and restaurants will be a feature of the new campus centre at the heart of NTU



New learning and relaxation spaces at the redeveloped campus spines

Students continue to be **actively engaged on policy matters** that affect them. This is done through the Students' Union and the Graduate Students' Club, and helps instil ownership and responsibility for one's campus experience. For example, students have provided feedback on the design of new halls of residence and learning hubs. Plans are underway to widen and deepen communication and consultation between student leaders and university management.

At the state-of-the-art Immersive Room, a 320-degree seamless rounded screen blurs the line between virtual and reality

DISCOVERING TOMORROW

It was indeed a year rich in research breakthroughs as we expanded the frontiers of high-impact science and technology. We continue to break boundaries to deliver fresh solutions to both new and old challenges.



RESEARCH

Interdisciplinary research is the key to uncovering new knowledge. Under the NTU 2015 strategic plan, NTU is focusing its research in five key areas to usher in a new era of discoveries: Sustainable Earth, Future Healthcare, New Media, New Silk Road and Innovation Asia. The university has also had continued success in securing competitive grants, attracting world-class talents and improving research quality.

Research Output

The number of publications co-authored by NTU faculty in international refereed journals with an impact factor of ≥ 4 in 2010 increased about fourfold compared to 2007. A similar increase was achieved for publications in international refereed journals with an impact factor of ≥ 10 .

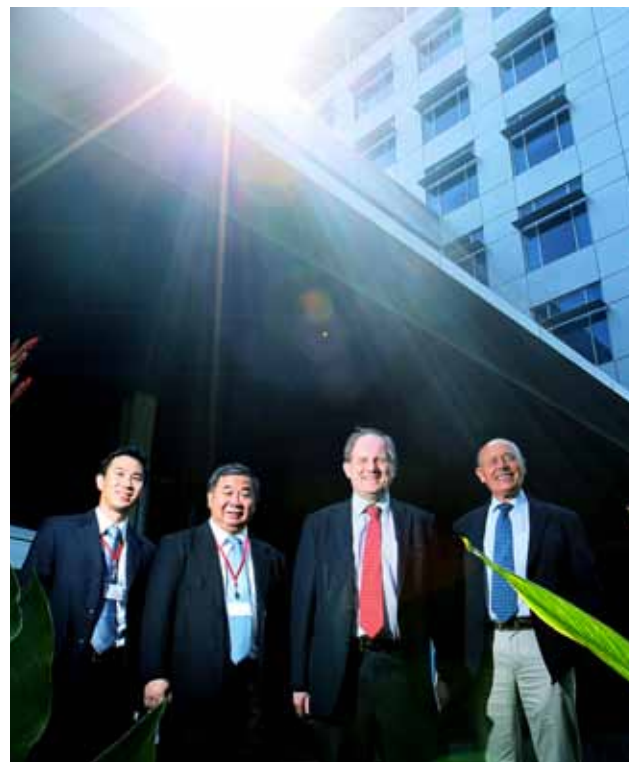
Competitive Funding

NTU's growing profile as a leader in innovation and research has attracted sustained competitive funding. The university's external competitive research funding awards rose from S\$92 million in FY2005 to S\$436.8 million in FY2010. The external grants awarded were boosted by block grants from organisations such as Singapore's National Research Foundation, the Economic Development Board, Environment & Water Industry Programme Office, Ministry of Education and the Media Development Authority, as well as by strategic partnerships with leading companies.

- Sustainability research continues to rank high on NTU's research agenda. In FY2010, the most significant external competitive research grant received was from the National Research Foundation for the **TUM-CREATE Centre for Electromobility**, a joint programme by NTU and Technical University of Munich to develop sustainable transportation solutions. CREATE (Campus for Research Excellence and Technological Enterprise) is an initiative of the National Research Foundation to foster ties between elite overseas universities and Singapore-based institutions.
- NTU is also the major university partner for two other CREATE programmes. Working with the University of California, Berkeley, NTU will contribute to **BEARS**

“Research is about moving the frontiers of knowledge for the benefit of society and economic development. It also enriches the teaching experience. This is the Humboldtian principle, where research and teaching go hand in hand...”

— Prof Bertil Andersson, NTU President, 2011 State of the University Address



Launch of the Solar Fuels Laboratory: (from left) Asst Prof Joachim Loo, NTU Provost Prof Freddy Boey, NTU President Prof Bertil Andersson, and NTU Visiting Professor James Barber from Imperial College London



The university's external competitive research funding awards rose from S\$92 million in FY2005 to S\$436.8 million in FY2010

(Berkeley Education Alliance for Research in Singapore), which has launched an interdisciplinary project to make buildings in the tropics more energy-efficient. The CREATE collaboration with Israel's Ben-Gurion University of the Negev and the Hebrew University of Jerusalem aims to find **nanomaterial solutions** that increase energy efficiency and reduce water wastage.

- NTU is also contributing to two other CREATE projects. The first is the **SMART (Singapore-MIT Alliance for Research & Technology) Centre's interdisciplinary research group on low-energy electronics systems** while the other is the **Singapore-Peking University**

Research Centre for a Sustainable Low Carbon Future (SPURc). Both projects were announced in June 2011.

- Other noteworthy successes by NTU in securing National Research Foundation grants include two out of four **Environment Technology Research Programme** grants (worth S\$1.5 million per project) awarded by Singapore's National Environment Agency and the Environment & Water Industry Development Council. The recipients were Prof Loh Teck Peng and Assoc Prof Xu Rong.
- NTU also won two out of four awards worth S\$10 million per project over five years under the National Research Foundation's

sixth **Competitive Research Programme** grant call. The grants were won by Prof Yoon Soon Fatt and Assoc Prof Hilmi Volkan Demir.

- Demonstrating the commercial potential of its research, NTU clinched seven out of 12 grants of up to S\$250,000 each under the National Research Foundation's **Proof-of-Concept** scheme, which aims to turn research ideas into commercialisable prototypes.
- In addition, the **National Institute of Education** received a S\$25 million grant from the National Research Foundation to set up **EduLab**, a space for educators to develop lessons and curricula that are based on new media.



The Institute on Asian Consumer Insight will answer questions such as how unique Asian tastes and cultures impact buying decisions

- NTU has also achieved success in securing Tier 2 grants from Singapore's **Ministry of Education**, with its success rate doubling from 8.8% in February 2010 (S\$5,249,000) to 16.4% in February 2011 (S\$6,738,000).
- In the international arena, NTU received EUR3 million (S\$5 million) from the AXA Research Fund to create a permanent **Chair in Natural Hazards** held by Prof Kerry Sieh, Director of the Earth Observatory of Singapore. This is the first AXA Chair in Asia.
- NTU received from the Economic Development Board S\$7.8 million for the development of **VIRTUS, IC Design Centre of Excellence**.
- NTU and the Economic Development Board have also jointly funded the **Institute on Asian Consumer Insight**, a new global centre studying pan-Asian consumer behaviour. Based at the Nanyang Business School, the national centre will receive support of up to S\$77 million over five years.
- **Fraunhofer IDM@NTU, COSMIC (the Centre of Social Media Innovations for Communities)** and the

Institute for Media Innovation's **BeingThere Centre** have received S\$8.78 million, S\$3.8 million and S\$10 million respectively from the Media Development Authority.

Building Excellence

- NTU's research scene has benefited from the increase in external funding and boost in research talent, coupled with collaborations with leading global universities and industry partners.
- Implementing **research proposal quality control** has been critical. The **NTU Research Council**, chaired by Prof Bengt Nordén from Chalmers University of Technology, Sweden, and former Chair of the Nobel Committee for Chemistry, continues to play a major role in reviewing research proposals. The council also helps to review applications for the premier Nanyang Assistant Professorship. NTU's interdisciplinary research centres and institutes are regularly reviewed by renowned international experts for their continued viability.
 - NTU strives to raise research integrity through its new **Institutional Review Board**. Chaired by Prof Lee Sing

Kong, Director of the National Institute of Education, this body is accredited by Federalwide Assurance and the Office for Human Research Protections. NTU is also working with Epigeum to develop an online course that teaches key elements of research integrity.

- **Core research facilities and infrastructure** that serve the NTU research community include the High-Performance Computing Centre, our structural genomics facility, the Nanyang NanoFabrication Centre and the Facility for Analysis, Characterisation, Testing & Simulation. These enhance NTU's ability to attract leading researchers, and act as focal points around which new laboratories and research centres can be established.
- Besides providing high-level support to NTU's research community, the **Research Support Office** is working to enhance research administration excellence through the **Research Administrators' Network**, a university-wide arrangement for research administrators to be equipped to support faculty to prepare competitive research proposals.

New Centres and Institutes

In AY2010, NTU further boosted its partnerships with leading universities, companies and government bodies. As always, the emphasis has been on research with societal relevance and impact.

- NTU and the Economic Development Board are partners on the **Institute on Asian Consumer Insight**. This national centre at NTU is the first organisation in the world to focus on Asian consumer behaviour. It will help establish Singapore as a pan-Asian consumer research hub by examining the wants and preferences of Asian consumers so businesses can better develop their strategies for Asian markets. The institute will also offer executive training and a Master's programme in Marketing.
- In July 2011, NTU established the **Solar Fuels Laboratory**. Set up with seed funding of S\$2 million, the centre is the first of its kind in Asia and aims to create sustainable energy sources by developing

"artificial leaf" solutions that use sunlight to extract hydrogen from water. NTU researchers will be collaborating with their counterparts at Imperial College London. Playing an advisory role at the laboratory is Prof James Barber, Ernst Chain Professor of Biochemistry at Imperial College London.

- Solar energy is also the impetus behind NTU's S\$3 million **Centre for Nanostructured Photosystems**. Also launched in July 2011, it is led by the pioneering biochemist Prof Michael Grätzel and will test-bed solar cell innovations and clean energy systems.
- NTU launched the **TUM-CREATE Centre for Electromobility** with the Technical University of Munich to drive research in electric vehicles solutions for tropical cities. Its industry partners include EADS Singapore, Gemalto, IBM Singapore, Infineon Technologies Asia Pacific, Robert Bosch (SEA) Ltd, Siemens AG, ST Kinetics and the Solar Energy Research Institute of Singapore.
- A new S\$23 million international research centre for telepresence and tele-collaboration known as the **BeingThere Centre** is studying ways to revolutionise communication in the 21st century. A collaboration between NTU, ETH Zurich and the University of North



The Centre for Nanostructured Photosystems is led by Prof Michael Grätzel, the Swiss pioneer of "artificial photosynthesis" and a key figure in NTU's sustainable energy initiatives



Fraunhofer IDM@NTU conducts research on interactive and digital media with real-world applications in education, entertainment and tourism. It is jointly set up with Fraunhofer-Gesellschaft, the largest organisation for applied research in Europe

- Carolina at Chapel Hill, the centre receives support from Singapore's Media Development Authority.
- A joint initiative of NTU and Fraunhofer-Gesellschaft, **Fraunhofer IDM@NTU** develops real-world technologies and applications based on visual computing. Among the centre's research partners are Graz University of Technology and University of Darmstadt, with the Media Development Authority providing funding support. The centre is Fraunhofer's first digital media research facility outside of Europe and the United States.
 - **MicroVision**, a leader in innovative ultra-miniature display technology, has also established its first global research and development centre at NTU. It will include a customised laboratory at NTU's Innovation Centre.



Sustainable transport solutions are being developed at the TUM-CREATE Centre for Electromobility



The NTU-SGX Centre for Financial Education – Asia's first "live" trading lab within a university

- Wind energy is another emergent field at NTU. Spearheaded with Spanish wind technology giant Gamesa, the **Gamesa Advanced Materials Research Centre** is the first in Southeast Asia to conduct research into wind turbine blade coatings that can withstand extreme conditions.
- NTU and SOLID ASIA, one of the world's leading solar equipment companies, pooled their expertise to start the S\$2 million **Centre of Excellence in Solar Thermal**

Energy. Together with the Austrian Institute of Technology, the centre will study ways to harvest solar thermal energy more efficiently.

- **VIRTUS, IC Design Centre of Excellence**, is a S\$50 million integrated circuit design research centre set up by NTU and Singapore's Economic Development Board. It seeks to develop technologies for integrated circuits and systems for applications in medical technologies, clean technologies and consumer electronics. Among the centre's partners are the University of Michigan, Purdue University, the University of California, Los Angeles, Technical University of Munich, Linköping University, Zhejiang University and Fudan University, as well as Agilent Technologies, Exploit Technologies, Infineon Technologies, Mediatek Inc, SiliconCore Technology, Systems on Silicon Manufacturing Co and Verigy.

- The Economic Development Board will be funding the **Institute for Sports Research**, a joint collaboration between NTU and Loughborough University.
- With global insurance company SCOR as its partner, NTU's **Insurance Risk & Finance**

Research Centre sponsors and directs primary research on insurance risk, Asian capital markets and other important finance-related issues in the Asia-Pacific. The centre's work is supported by Rega Capital Management and other corporate sponsors.

- NTU and the Singapore Exchange joined forces to start the **NTU-SGX Centre for Financial Education** at the Nanyang Business School. The centre provides an environment that helps sophisticated market participants and investors in financial markets planning, development and governance.

In addition to new centres and institutes, NTU also launched a fresh partnership with the **German Aerospace Centre** to conduct research in satellites and guided navigation, remote sensing and signal processing, and unmanned aerial vehicles, as well as sustainability research.

An agreement was also signed with German technology company **memsys** to research water desalination technologies, with a focus on membranes. The joint project is supported by a S\$400,000 grant from the Environment & Water Industry Programme Office.

WORLD-CLASS FACULTY



Prof Stephen Kevin Smith, Vice President (Research) and Founding Dean of the Lee Kong Chian School of Medicine

Excellent facilities, a supportive environment and resources to fulfil their academic and research goals – these are just some of the reasons NTU continues to attract the best minds from around the world.

Senior Appointments

A number of world-class academics renowned in their respective fields of study joined NTU's academic and research community:

- **Prof Stephen Kevin Smith** Vice President (Research) and Dean, Lee Kong Chian School of Medicine
- **Prof Staffan Kjelleberg** Director, Singapore Centre on Environmental Life Sciences Engineering (SCELSE)
- **Prof Yehuda Cohen** Deputy Director, SCELSE
- **Prof Stephan Schuster** Cluster Leader, SCELSE
- **Prof Stefan Wuerz** Cluster Leader, SCELSE

- **Prof Michael Givskov** Cluster Leader, SCELSE
- **Prof Janie Fouke** Dean, College of Engineering
- **Prof Liu Hong** Chair, School of Humanities & Social Sciences
- **Prof Anthony Hayes** Head, Division of Psychology, School of Humanities & Social Sciences
- **Assoc Prof Charles M Rubin** Head, Division of Earth Sciences, School of Physical & Mathematical Sciences

Visiting Professors

- **Prof Michael Grätzel** Advisor, Centre for Nanostructured Photosystems
- **Prof Atila Alvandpour** Visiting Professor, School of Electrical & Electronic Engineering, and Director of VIRTUS, IC Design Centre of Excellence

- **Prof Krishna V Palem** Nanyang Visiting Professor, School of Physical & Mathematical Sciences, and Director and Founder, ISAID (the Institute of Sustainable & Applied Infodynamics)
- **Prof Michael Kuhl** Visiting Professor, School of Biological Sciences
- **Prof Daniel Hamlet Huson** Visiting Professor, School of Biological Sciences
- **Prof Abeyaratne Rohan Chandra** Visiting Professor, School of Physical & Mathematical Sciences

- **Asst Prof Ali Miserez** School of Materials Science & Engineering
- **Asst Prof Wang Xianfeng** EOS

NTU's own premier young faculty recruitment programme, the elite **Nanyang Assistant Professorship**, has received more than 2,150 applications from over 40 countries since its launch in 2007. The professorship awards S\$1 million over three years for research and has attracted exceptional young researchers from diverse disciplines to NTU. There are now 22 Nanyang Assistant Professors at NTU. The fourth call saw 418 applications, out of which seven were selected. Our 2011 Nanyang Assistant Professorship recipients are:

- **Asst Prof Cao Fan** School of Humanities & Social Sciences
- **Asst Prof Hajime Hirao** School of Physical & Mathematical Sciences
- **Asst Prof Li Mo** School of Computer Engineering
- **Asst Prof Loh Zhi Heng** School of Physical & Mathematical Sciences
- **Asst Prof Rei Kinjo** School of Physical & Mathematical Sciences

- **Asst Prof Hirotaka Sato** School of Mechanical & Aerospace Engineering
- **Asst Prof Ivan Shelykh** School of Physical & Mathematical Sciences

The recipients of the inaugural defence scholarships awarded by Singapore's Ministry of Defence are:

- **Dr Oleg Vasylykiv (Temasek Research Fellowship)** Temasek Laboratories@NTU
- **Dr Edwin Teo (Nanyang-DSO Post-Doctoral Fellowship)** Temasek Laboratories@NTU

Other Appointments

NTU is the choice of the lion's share of the brightest young faculty who came to Singapore through the Singapore National Research Foundation's elite young investigator scheme. In January 2011, five out of the 10 **National Research Foundation Fellows** chose NTU over other universities and public agencies in Singapore. Our 2011 Fellows are:

- **Assoc Prof Cho Nam-Joon** School of Materials Science & Engineering
- **Asst Prof Emma Hill** Earth Observatory of Singapore (EOS)
- **Asst Prof Kimberly Kline** SCELSE



Prof Janie Fouke, Dean of the College of Engineering

RESEARCH SPOTLIGHT

In AY2010, NTU's thriving research scene encompassed the wide expanse of outer space to the nanoscale. Here's a showcase of interdisciplinary research efforts and initiatives that demonstrate the university's diverse strengths.

Sustainable Earth

This was the year NTU made it to space. In April 2011, **X-SAT**, Singapore's first locally-made satellite, was launched and operated successfully in space. The X-SAT team made its first contact with the satellite from the mission control station at NTU's Research TechnoPlaza on 20 April 2011, less than ten hours after the launch of the satellite. X-SAT has been sending back imagery data to help researchers study environmental changes. It orbits the earth at a height of 800km and has an operational lifespan of three years. The X-SAT team is the winner of a Defence Technology Prize from the Ministry of Defence.

NTU's Institute of Sustainable & Applied Infodynamics and the Swiss Centre for Electronics & Microtechnology unveiled a new technique that **doubles the efficiency of computer chips** by trimming away rarely used circuits. While these "pruned" microchips make a few calculation errors, tests show that cleverly managing the errors can yield chips that are two times faster, consume about half the energy and take up about half the space of traditional microchips.

The world's smallest on-chip low-pass filter, developed by Prof Yeo Kiat Seng of the School of Electrical & Electronic Engineering, is 1,000 times smaller than existing off-chip filters. It can lead to a vast improvement in signal quality as it removes nearly all unwanted interference and noise in the environment. This results in enhanced clarity for users of mobile phones and other wireless technologies.

Future Healthcare

Medical science has been another fruitful area of research for NTU. Among the new biomedical devices from the university is a **fully biodegradable cardiac occluder** to repair heart defects, developed by Prof Subbu Venkatraman of the School of Materials Science & Engineering and Prof Freddy Boey, currently Provost of NTU.

New surgical tools highlight NTU's engineering strengths. Assoc Prof Louis Phee from the School of Mechanical & Aerospace Engineering and his team designed special **robotic fingers** that allow doctors to remove stomach tumours without leaving scars. This invention has been shown to cut surgery time from eight hours to 17 minutes, and to speed up the recovery process.

NTU researchers have also discovered that the **growth of cancer cells can be avoided and tumours reduced** by controlling the ratio of superoxide and hydrogen peroxide within tumour cells. The study was led by Asst Prof Andrew Tan of the School of Biological Sciences.



A world first, this endoscope with robotic fingers makes it possible to remove tumours in the stomach without leaving scars

Assoc Prof Lin Zhi Ping of the School of Electrical & Electronic Engineering is working on a new **medical tool that gives an objective measure of a patient's risk of going into cardiac arrest**. Based on heart rate variability, the technique is 50% more accurate than methods that rely on traditional vital signs alone. One of NTU's partners is the Singapore General Hospital and researchers are looking to apply the method for real-time use in cardiac arrest prediction in emergency rooms.

Another innovative project, led by Asst Prof Ng Kee Woei of the School of Materials Science & Engineering, studies how **keratin in hair may be used to quicken healing in wounds**, especially for burn victims.

New Media

Assoc Prof Shu Jian Jun of the School of Mechanical & Aerospace

"At NTU, we have good ways of turning ideas into reality."

– Prof Freddy Boey, NTU Provost



Singapore's first human-sized robot, NASH

Engineering is studying how **DNA-based computing** can be used for strategic assignment problems. Unlike silicon-based computing, which relies on binary systems, DNA-based computing is broad-ranged, such that massive parallel problems, combinatorial problems and AI-solving problems can all be addressed more efficiently. Better yet, DNA-based computers do not require electricity to run.

Trials of the **iSlate tablet** were completed in rural India. Designed for use by schoolchildren, the low-cost, energy-saving electronic notepad makes use of a breakthrough computer chip that allows it to run on miniaturised solar panels. An estimated 100 million students lacking electricity will benefit from this invention. The project is managed by NTU's Institute of Sustainable & Applied Infodynamics, a joint institute with Rice University.

New Silk Road

NTU's **engagement with China** continued to deepen on different levels. In Guangzhou in September 2010, NTU unveiled the Lien Public Service Excellence Index for Chinese Cities, a review of the administrative strengths of 32 cities. The university also hosted the inaugural Asia-Pacific Mayors' Forum, attended by 500 government officials from various Chinese cities as well as from around the region.

NTU will also lend its expertise in public administration to a **new industrial park in Renhuai City**, Guizhou, with these efforts spearheaded by the Nanyang Centre for Public Administration.

Innovation Asia

Assoc Prof Xie Ming of the School of Mechanical & Aerospace Engineering

showcased his invention of a robot called **NASH** (NTU Advanced Smart Humanoid). The 1.8m-tall robot has the beginnings of artificial intelligence: it can make decisions based on information it gathers, gesture, walk, climb stairs and follow verbal instructions.

Asst Prof Yang Jinglei of the School of Mechanical & Aerospace Engineering and his team successfully developed a unique **self-healing, anti-rust coating** for metals. The coating contains microscopic capsules that, once broken, release chemicals that react with moisture in the air to form a plastic-like sealant over the scratch, preventing rusting and corrosion. The team hopes to commercialise the coating, which could be the new standard in rust-proofing technologies.

Asst Prof Stephen Dimmock of the Nanyang Business School found

DISCOVERY

that it is possible to **predict business fraud with better accuracy**. Studies show that if one avoided investing with the 5% of firms with the highest fraud risk (as calculated by the research model), one would avoid 30% of fraud – and, more strikingly, more than 50% of the dollar losses from fraud could be prevented. The groundbreaking study was one of only five (from 1,500 research papers submitted) to receive an award from the European Finance Association.

A **vein pattern recognition system** developed by Asst Prof Adams Kong of the School of Computer Engineering has made it possible to identify criminals based on the veins on their bodies. Awarded a S\$250,000 Proof-of-Concept grant from the National Research Foundation, this research has applications in law enforcement.

NTU’s **Incubation and Mentoring** programme combines entrepreneurship education and mentoring with existing initiatives to help prospective entrepreneurs succeed.

World-beaters

Meet some of the newest members of NTU’s leading-edge research community.



Prof Stephen Kevin Smith
Vice President (Research) and Dean, Lee Kong Chian School of Medicine

Prof Smith was the Principal of the Faculty of Medicine and Pro Rector (Health) at Imperial College London and served as the first Chief Executive of Imperial College

Healthcare National Health Service Trust. A gynaecologist by training and a prolific researcher, he has published over 225 papers on reproductive medicine and cancer. He led the formation of the United Kingdom’s first Academic Health Science Centre and spearheaded the development of the Global Medical Excellence Cluster for London and South East England. Prof Smith is a founder-member of Metris Therapeutics Ltd and GNI Group. In 2009, he was recognised at the National Health Service Leadership Awards in England, where he was named Innovator of the Year. In addition, he was the only National Health Service chief executive to be listed in *Health Service Journal’s* 2009 rankings of the top 30 most powerful people in health management policy and practice in England. Prof Smith brings a wealth of experience to his dual role as Vice President (Research) and Dean of the Lee Kong Chian School of Medicine.



Prof Staffan Kjelleberg
Director, Singapore Centre on Environmental Life Sciences Engineering

An internationally renowned authority in the field of biofilms, Prof Kjelleberg co-founded the Centre for Marine Bio-Innovation at the University of New South Wales, Australia, where he serves as Director. The centre is a global focal point for interdisciplinary research into biofilms and chemical signalling. His professional experience includes positions on national and international scientific societies, research councils, and governmental committees, as well as the advisory boards of biotechnology companies, editorial boards and scientific journals.



Prof Stephan Schuster
Cluster Leader, Singapore Centre on Environmental Life Sciences Engineering

Prof Schuster’s research is focused on the genetic diversity of natural populations. He completed his PhD at the Max Planck Institute for Biochemistry, Germany, and has previously held senior research positions there as well as at Pennsylvania State University. Prof Schuster’s groundbreaking work on sequencing the DNA of the extinct woolly mammoth captured the public imagination and he was selected for *Time* magazine’s list of “The World’s Most Influential People” in 2009. His current research interests include metagenomics, evolutionary biology and ancient DNA.



Asst Prof Emma Hill
National Research Foundation Research Fellow and Principal Investigator, Tectonics Group, Earth Observatory of Singapore

A geodesist with an interest in climate change and crustal deformation, Asst Prof Hill obtained her PhD in geophysics from the University of Nevada, Reno, before completing a postdoctoral fellowship at the Harvard-Smithsonian Center for Astrophysics, Massachusetts, where she subsequently served as a research scientist. A Nanyang Assistant Professor, she is currently studying the tectonics of the Sumatran subduction zone, as well as glacier melting and regional variations in sea-level change.



Asst Prof Kimberly Kline
National Research Foundation Research Fellow, Singapore Centre on Environmental Life Sciences Engineering and School of Biological Sciences

In her research investigations, Asst Prof Kline uses genetic, biochemical and cell biological approaches to study host-pathogen interactions during infections. She completed her PhD at Northwestern University, Illinois. A Nanyang Assistant Professor, she is working to develop antibacterial agents and therapeutic programmes for major human pathogens, in order to fight diseases in the future. She also hopes to create a vibrant and supportive environment for undergraduates, graduate students and postdoctoral researchers.



LEADING THE WAY

The NTU can-do spirit unites achievers on our campus who distinguish themselves as scholars and outstanding individuals – and as thought leaders and game-changers. Many of them reach out and give back to the university and the wider community.



SENIOR MANAGEMENT AND FACULTY



Wilhelm Exner Medal 2010 recipient Prof Bertil Andersson (second from right) with (from left) Dr Uwe Sleytr, President of the Wilhelm Exner Foundation; Ms Margarete Kriz-Zwittkovits, President of the Austrian Association of Small and Middle-sized Enterprises; and Dr Beatrix Karl, Austrian Federal Minister of Science & Research



Prof Eddie Kuo, the second person at NTU to be named Emeritus Professor

Prof Bertil Andersson

President, NTU

- Wilhelm Exner Medal, Austria

Prof Freddy Boey

Deputy President and Provost

- Public Administration Medal (Silver)

Prof Eddie Kuo

Founding Dean, Wee Kim Wee School of Communication & Information, and Founding Interim Dean, School of Humanities & Social Sciences

- Conferred Emeritus Professor status by NTU

Prof Lim Chong Yah

Albert Winsemius Chair Professor of Economics, School of Humanities & Social Sciences

- Special Recognition Award, 50th Anniversary of the National Trades Union Congress

Prof Pan Tso-Chien

Executive Director, Institute of Catastrophe Risk Management

- Defence Technology Prize 2010 (Individual R&D Award)

Prof Ang Soon

Head, Division of Strategy, Management & Organisation, Nanyang Business School

- Public Administration Medal (Silver)

Prof Kang Jun-Koo

Head, Division of Banking & Finance, Nanyang Business School

- Rated the top finance researcher in the Asia-Pacific by the *Pacific-Basin Finance Journal*

Prof Tan Hun Tong

Nanyang Business School

- Rated the world's top accounting researcher by Brigham Young University

Assoc Prof Geraldine Chen

Director, Student Development and Outreach, Nanyang Business School

- Public Administration Medal (Bronze)

GRADUATE STUDENTS

Assoc Prof Goh Wang Ling

Associate Dean (Outreach & External Relations), College of Engineering

- Public Administration Medal (Bronze)

Asst Prof Madhavi Srinivasan

School of Materials Science & Engineering

- L'Oréal Singapore For Women in Science National Fellowship 2010

Asst Prof Andy Khong

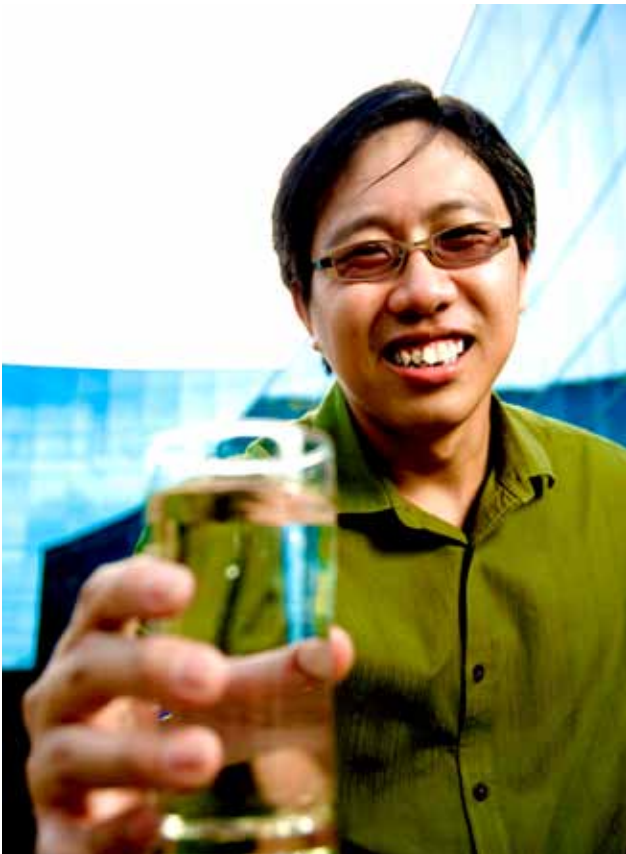
School of Electrical & Electronic Engineering

- Junior Chamber International Ten Outstanding Young Persons of the World Honouree 2011

Dr Adrian Yeo

Research Fellow, Singapore Membrane Technology Centre

- Watermark Award 2010



Dr Adrian Yeo, winner of the Watermark Award 2010



Law Jia Yan was accepted into the IEEE Magnetics Society Summer School at the University of New Orleans

Feng Shu

School of Biological Sciences

- Chosen by the Scientific Review Panel of the Council for the Lindau Nobel Laureate Meetings to participate in the 61st meeting of the Nobel Laureates

V Cholan Kopparumsolan

School of Humanities & Social Sciences

- American Polygraph Association President's Award

Law Jia Yan

School of Materials Science & Engineering

- Accepted to the IEEE Magnetics Society Summer School, University of New Orleans, Louisiana, USA

Benjamin Li

Wee Kim Wee School of Communication & Information

- Top Paper Award at the 61st International Communication Association Conference, Boston, Massachusetts, USA

Dilip Kumar Prasad

School of Computer Engineering

- Selected for the 2011 Kauffman Global Scholars Programme

Nagarajan Raghavan

School of Electrical & Electronic Engineering

- IEEE Electron Devices Society PhD Student Fellowship Award 2011

HONOURS

UNDERGRADUATES



L'Oréal Brandstorm 2011 global champions Heng Xue-Li, Chye Nyit Fhen and Jonathan Chan

Engineering and Innovation

Nanyang Venture IV eco-car

School of Mechanical & Aerospace Engineering

- First prize, Diesel Fuel category, and Off-Track Award for Safety, Shell Eco-marathon Asia 2011

Nanyang Venture II eco-car

School of Mechanical & Aerospace Engineering

- Winner of the Shell Eco-car Race Challenge and “Best Overall Speed” prize at the inaugural Singapore G1

X-5 prototype plane

Joshua Chao (School of Mechanical & Aerospace Engineering), Eunice Lim (School of Art, Design & Media), Ma Xiao (School of Materials Science & Engineering) and Yuan Shenghai (School of Electrical & Electronic Engineering)

- Winner, Navigation Flight Design Level, 2011 Taiwan Unmanned Aircraft Design Competition

Ernest Chen, Peh Chong Yi, Peng DongHong and Wong Zi Yuan

College of Engineering

- Runners-up, 2011 Staples Global EcoEasy Challenge

Doan Tuan Anh, Khuc Anh Tuan and Pham Quang Vu

School of Computer Engineering

- Finalists, 2011 Association for Computing Machinery International Collegiate Programming Contest

Business and Enterprise

Neo Liat Beng and Alvin Wee

Nanyang Business School

- Wunderman’s Z AcademySM Marketers of the Year 2021, with sponsored trips to two Cannes Lion International Festivals of Creativity

Alex Chan, Jonathan Goh, Eddy Ho and Nicholas Lee

Nanyang Business School

- Champions, Bain & Company Case Challenge 2011

Jonathan Chan, Chye Nyit Fhen and Heng Xue-Li

Nanyang Business School

- Champions, L’Oréal Brandstorm 2011 International Finals

Kanesh Balasubramaniam, Lau Seo Wang, Tan Sing Nan and Xu Wei

Nanyang Business School

- Champions, McGill Management International Case Competition

Chen Xinyi, Gabriel Lee, Liu Xinyi and Yeo Shi Yuan

Nanyang Business School

- Runners-up, 2011 Chartered Institute of Management Accountants Global Business Challenge

NTU Students in Free Enterprise

- Champions (Project Jari Jemari), Rotary Youth Social Entrepreneurship Challenge 2010

- Spirit of SIFE Award (Gourmet Guru), SIFE Singapore National Competition



National sailor Victoria Chan clinched Singapore’s first medal at the World University Games

- SIFE Student of the Year Award (Ang Jun Cheng), SIFE Singapore National Competition

- Sportswoman of the Year: Dipna Lim Prasad (track and field)

- Special Achievement Award: Victoria Chan (sailing)

- Spirit Award (for coaches): Ilyas Hakim Jamaludin (silat) and Selvakumar Sreenivasan (women’s football)

Sports

Our student-athletes hit new heights in 2010, winning their first overall championship at the **Singapore University Games**. NTU won the most number of championship titles, and in total, 340 student-athletes competed in the 24 championship events.

NTU Women’s Football Team

- Champions, Football Association of Singapore Women’s Youth League 2010

Colleen Goh, Lee Cyn Li, Lee Yi Shi and Dipna Lim Prasad

- Bronze medallists at the 15th ASEAN University Games

NTU Sportspeople of the Year (2011)

- Sportsman of the Year: Adriel Chua (archery), who also placed 6th at the 8th World University Championships out of an international field of 30



The NTU Women’s Football Team, champions of the Football Association of Singapore Women’s Youth League 2010

HONOURS

Artistic, Cultural, Community and Environmental Achievements

Wendy Cheng, Han Xuemei, Flora Man and Lim Chee Harn

- Wee Kim Wee School of Communication & Information
- *Epiphany*: Best of Film and Best of Show, Crowbar Awards 2010

Wang Wei Yang

- Wee Kim Wee School of Communication & Information
- *Halo: Reach*: Best of Advertising, Crowbar Awards 2010

Subi Le

- School of Art, Design & Media
- *Ethereal Visage*: Best of Photography, Crowbar Awards 2010

David Lee

- School of Art, Design & Media
- *Living It*: Accepted at the 2010 Pusan International Film Festival

Harry Zhuang and Henry Zhuang

- School of Art, Design & Media
- Encouragement Award at DigiCon6

NTU DanceSport Academy

- One gold, one silver and four bronze medals, Malaysia National DanceSport Championships 2011

Chan Wai Ping, Sun Yiru, Yu Jianqi and Zhang Zhaohong

- NTU Chinese Debating Squad
- Runners-up, 5th Intersivity Chinese Debate Tournament (Asia-Pacific Open)

Jayesh Kannan, Anindita Pal and Arun Shankar

- NTU English Debating Squad
- Champions, Singapore Council of Women's Organisations-Singapore Management University Intersivity Debating Championships 2011

Red Cross Youth NTU Chapter

- Bloodmobile Organisers Gold Award

Chua Ang Hong

- Nanyang Business School
- HSBC/National Youth Achievement Award Youth Environmental Award 2011

Christopher Ngoi

- Nanyang Business School
- ToptoTop Global Climate Solution Award



Chua Ang Hong, HSBC/National Youth Achievement Award Youth Environmental Award winner



Christopher Ngoi, one of seven global winners of the inaugural ToptoTop Global Climate Solution Award

NTU AND UNIVERSITY ENTITIES



The School of Art, Design & Media, winner of the Green Mark Platinum Award for adopting best practices in environmental sustainability

NTU

- Leading HR Practices Award (Strategic HR) and Leading HR Leader (Mrs Angela Lim, Chief Human Resource Officer) at the Singapore HR Awards 2011

School of Art, Design & Media

- Green Mark Platinum Award from Singapore's Building & Construction Authority for innovations in sustainable building design

Confucius Institute, NTU

- Confucius Institute of the Year (2010) at the 5th Confucius Institute Conference

Lien Aid (a non-governmental organisation founded by NTU and the Lien Foundation)

- Global Charity Award for non-governmental organisations from China Soong Ching Ling Foundation and China's Ministry of Civil Affairs

MAKING OUR MARK

It was a pivotal year of consolidation and expansion; a year of progress and achievement. We will continue to stretch horizons and shape the future as a great global university founded on science and technology.



HIGHLIGHTS

Global Standing

- NTU **jumps 16 places** to 58th position in the QS World University Rankings 2011 to be the fastest-rising Asian university in the world's top 100 universities between 2010 and 2011.
- The **Nanyang Business School** is ranked among the world's top 35 business schools by *The Financial Times*.
- The **Nanyang MBA** is consistently ranked in the top 100 by *The Economist*.
- NTU is the first Singaporean university to be rated **5 Stars** by the QS Stars ranking system.
- The **International Academic Advisory Panel** notes the "remarkable progress" NTU has made in becoming a world-class research-intensive university.

Leadership

- **Prof Bertil Andersson**, the previous NTU Provost, is inaugurated as the **third President of NTU**, succeeding Prof Su Guaning. He becomes the new Chairman of the Global Alliance of Technological Universities.
- **Prof Freddy Boey**, the previous Chair of the School of Materials Science & Engineering, takes over from Prof Andersson as Provost. He is also appointed NTU's Deputy President.
- The **senior leadership team is restructured** to support new strategic directions and priorities.

Education

- The **Lee Kong Chian School of Medicine** is established.
- NTU unveils its five-year strategic blueprint, **NTU 2015**, with a focus on five peaks of excellence.
- The new **Campus Master Plan** showcases how NTU will be transformed into a sustainable and vibrant mini-city.
- A **new undergraduate experience** offering more breadth, choice and flexibility is announced.



Passing the baton: Prof Bertil Andersson, the third President of NTU, with his predecessor, Prof Su Guaning, President Emeritus of NTU

- At the 2011 Convocation, NTU produces a record number of **9,066 graduates**.

New Centres and Institutes

- **NTU-SGX Centre for Financial Education** (with the Singapore Exchange)
- **TUM-CREATE Centre for Electromobility** (with Technical University of Munich)
- **Berkeley Education Alliance for Research in Singapore** (with University of California, Berkeley)
- **CREATE collaboration** with Ben-Gurion University of the Negev and Hebrew University of Jerusalem
- **VIRTUS, IC Design Centre of Excellence**
- **BeingThere Centre** (with ETH Zurich and University of North Carolina at Chapel Hill)
- **Solar Fuels Laboratory**
- **Centre of Excellence in Solar Thermal Energy** (with SOLID ASIA)
- **Insurance Risk & Finance Research Centre** (with SCOR)
- **MicroVision's** first global research and development centre
- **Fraunhofer IDM@NTU** (with Fraunhofer-Gesellschaft)



Making local philanthropic history: Dr Lee Seng Tee (second from right) of the Lee Foundation, which donated S\$150 million to NTU for the Lee Kong Chian School of Medicine

- **Institute on Asian Consumer Insight**
- **Centre for Nanostructured Photosystems**

Innovations

- Singapore's first locally-built satellite, **X-SAT**, is successfully launched into space. NTU's engineering students begin building nano- and pico-satellites.
- NTU and the Action Community for Entrepreneurship jointly become the third founding member of the **World Entrepreneurship Forum**, a global innovation think-tank.
- An **"innovators' nest"** is developed at the Innovation Centre as a campus hotspot for activities related to innovation and entrepreneurship.
- Organised by the Nanyang Technopreneurship Centre, the **Ideas.inc. Business Challenge** uncovers innovative ideas, products and solutions by student-entrepreneurs.

Gifts to the University

- NTU stands shoulder to shoulder with some of the best universities in the world with long traditions of giving. A S\$150 million gift from the Lee Foundation to name the new Lee Kong Chian School of Medicine creates local philanthropic history. The Class of 2011 also sets a new milestone

for NTU and Singapore with 80% of the graduating cohort contributing to NTU's **iGave Graduation Giving** campaign – a commendable achievement even by international standards. The total Class Gift of S\$105,344 is the biggest sum raised by graduating students.

- The **Class of 1985** celebrates its 25th reunion with a fundraising effort that nets S\$3 million (including government matching) for student bursaries, scholarships and book prizes for engineering undergraduates.
- Alumnus **Tan Chade-Meng** establishes the endowed Tan Teo Scholarship with a donation of S\$250,000. Two scholarships, each worth S\$10,000, will be made available annually to students, one from the School of Computer Engineering and the other from any school in NTU.
- More faculty and staff give back, demonstrating their dedication to NTU. The 2011 **Faculty and Staff Giving** campaign returns a record participation rate of 49%, up from 34% in 2010.
- The **Business and Community Partners** programme is a platform for companies and community organisations to provide financial assistance to needy NTU students. In its inaugural year, the programme garnered the support of 135 donors, who gave more than S\$1 million from January to December 2011.

HIGHLIGHTS

- As a tribute to Mrs Wee Kim Wee, a coffee-table cookbook, *Cooking for the President*, was published. NTU took the lead in fundraising and raised S\$1.3 million from the proceeds of the sale of the book to benefit five of Mrs Wee's favourite charities that include the **Wee Kim Wee Legacy Fund at NTU**.

Gifts of significant impact received in FY2010/2011 (April 2010 to March 2011):

- S\$150 million from the **Lee Foundation** to support the Lee Kong Chian School of Medicine in the areas of bursaries, education and research.
- A total of S\$4.6 million from the **Temasek Foundation** for

various education and research programmes. These include the Temasek Foundation-NIE Educational Leadership Programme (Vietnam), Training and Capacity-Building Programme on Seismic Strengthening (the Philippines), "Training-of-Trainers" Programme in Governance and Public Administration (China), the Asian Journalism Fellowship Programme and the LEaRN (Leadership Enrichment and Regional Networking) Programme.

- S\$3 million from the **Bakrie Centre Foundation** to establish the Bakrie Professorship in Southeast Asian Policy. An additional S\$600,000 funds Bakrie Graduate Scholarships for students taking Indonesian

Studies at the S Rajaratnam School of International Studies.

- A S\$2.5 million (S\$5 million after matching) endowed gift from **MediaTek**, establishing the MediaTek Professorship in Integrated Circuit Design.
- S\$1 million from **Wilmar International Ltd** to establish Wilmar International China Leadership Scholarships for NTU's Mayors' Class.
- S\$2 million from **Kuok Khoon Hong** to create KKH Opportunity Scholarships for students of the Nanyang Business School to venture into emerging economies for internship.
- S\$1 million from **Prima Ltd Singapore** for the Cheng Tsang



80% of the Class of 2011 gave back to NTU, setting a new record in graduation giving



Photo: Kevin Yang Art direction: Cheah Wei Chun

The Student Activities Centre is a hub for students with its central location and long opening hours from 7am to 2am



NTU, the world's first Youth Olympic Village, hosted over 5,000 athletes and team officials taking part in the inaugural Youth Olympic Games

Man Chair Professorship in Energy. The Professorship has its origins in 1999 when Prima made a S\$1.5 million gift to NTU to set up a Visiting Professorship.

Alumni

- NTU connects with its 156,000-strong alumni through **65 local and global alumni chapters**. Twelve new alumni associations are established – three in Singapore and nine abroad (eight in China and one in the USA).
- More than **40 events** are organised, among them welcome parties, gatherings, reunions, dialogue sessions, dinners and forums. Online and social media channels also help alumni keep in touch.

Campus Life

- NTU welcomes 5,000 international athletes and officials as the **Youth Olympic Village** for the inaugural Youth Olympic Games, held from 10 to 26 August 2010.
- **New social spaces** such as a one-stop Student Activities Centre and Global Lounge open.
- The student-run **Nanyang Arts Festival**, held over three months, brings dance, music and theatre to the campus population and beyond.
- Organised by the NTU Graduate Students' Club, the **TEDx conference** sees 13 international leading lights coming together to share ideas worth spreading.

HIGHLIGHTS

Eminent Visitors

Among the world-renowned scientists and top international dignitaries who visited NTU were:

Heads of State

- **Dr Heinz Fischer**
President of Austria
- **Mr Porfirio Lobo Sosa**
President of Honduras
- **Dr Navinchandra Ramgoolam**
Prime Minister of Mauritius

Distinguished Scientists

- **Prof Jerome Friedman**
Nobel Laureate in Physics (1990)
- **Prof Michael Grätzel**
Millennium Technology Prize Laureate (2010)
Lee Kong Chian Distinguished Professor
- **Prof Kerson Huang**
Professor of Physics Emeritus, Massachusetts Institute of Technology
Nanyang Professor
- **Prof Rudolph Marcus**
Nobel Laureate in Chemistry (1992)
Lee Kong Chian Distinguished Professor
- **Prof Robert Richardson**
Nobel Laureate in Physics (1996)
- **Prof Vladimir Voevodsky**
Fields Medallist (2002)
- **Prof John Walker**
Nobel Laureate in Chemistry (1997)
Lee Kong Chian Distinguished Professor



Dr Heinz Fischer, President of Austria (centre)



Prof Kerson Huang from the Massachusetts Institute of Technology



Prof Rudolph Marcus, Arthur Amos Noyes Professor of Chemistry at the California Institute of Technology

Benefactors

(April 2010 to March 2011)

S\$100 million and Above

Lee Foundation

S\$1 million and Above

Bakrie Centre Foundation
Kuok Khoon Hong
MediaTek Foundation
SCOR Reinsurance Asia-Pacific Pte Ltd
Temasek Foundation CLG Ltd
Wilmar International Ltd

S\$250,000 and Above

Aon Benfield Asia Pte Ltd
Citi Foundation
International Air Transport Association
NIE International Pte Ltd
Rega Capital Management Ltd
Tan Teo Charitable Foundation
Tin Ka Ping Foundation
Wan Boo Sow Family

S\$100,000 and Above

BD CraneTech Pte Ltd
CAD-IT Consultants (Asia) Pte Ltd
Charles Kuo
Hi-P International Ltd
Ho Ngiap Kum
Jiangsu Huailong Materials Company Ltd
Khoo Hock Tin
Lian Ho Lee Construction Pte Ltd
Lim Cheng Eng
Motorola Foundation
Ong Tiong Tat, Trustee of the Estate of Koh Choon Joo
Singapore Technologies Engineering Ltd
Singapore Totalisator Board
Sugiono W Sugialam
Tan Kwang Hwee
The Ford Foundation
The University of North Carolina at Chapel Hill

S\$25,000 and Above

Ancora Foundation
Association of Process Industry
CapitalLand Ltd

Chang Long Jong
Dr and Mrs Alex Tan Pang Kee
DSM Nutritional Products Asia Pacific Pte Ltd
DV Partners Pte Ltd
Hb Glass and Aluminium Pte Ltd
IAI Asia Pte Ltd
ICAEW South East Asia Ltd
Inderjit Singh
Institute of Materials (East Asia)
Jurong Consultants Pte Ltd
Kah Hong Pte Ltd
Keppel Fels Ltd
LBW Consultants LLP
Lim Chong Yah
Lim Eng Ping
Lim Kay Hua
Lim Kay Kok
Lim Kay Seng
Lim Kay Tiong
Lim Soo Peng
Linda Oei Swan Chu
Lubritrade Trading Pte Ltd
Materials Research Society of Singapore
Micron Technology Foundation, Inc
Molex Singapore Pte Ltd
National Instruments Singapore Pte Ltd
OCBC
Professional Engineers Board Singapore
Prudential Assurance Company Singapore Pte Ltd
Risk Management Solutions, Inc
Singapore Chinese Chamber of Commerce Foundation
Singapore Technologies Electronics Ltd
Sonny Bensily
Spring Singapore
Tan Joo Kee Scholarship Fund
Tan Woi @ Tan Siew Hwa
Tang See Chim
Thye Hong Management & Services Pte Ltd
Vertex Venture Management Pte Ltd
Wong Hing Long Technologies Pte Ltd
World Future Foundation Ltd
Four anonymous donors

FINANCIAL REVIEW

Corporate Governance	61
Financial Statements	
• Report of Trustees	64
• Statement by Trustees	66
• Independent Auditors' Report	67
• Balance Sheets	69
• Statement of Comprehensive Income	70
• Statements of Changes in Funds and Reserves	72
• Consolidated Cash Flows Statement	74
• Notes to the Financial Statements	75

CORPORATE GOVERNANCE

Introduction

In April 2006 under the Nanyang Technological University (Corporatisation) Act (Cap. 192A), NTU was corporatised from a statutory board to a not-for-profit company limited by guarantee (Reg. No. 200604393R) formed under the Companies Act (Cap. 50) of Singapore.

This marks a new phase in its development. Whilst corporatisation gives NTU greater administrative and financial autonomy, it also calls for greater ownership and accountability and a higher standard of corporate governance to safeguard the best interest of its stakeholders.

Creating a structure for and achieving a high standard of corporate governance, with clear internal control systems, reporting and responsibility lines and procedures, are essential for NTU as it moves towards its vision to be a great global university founded on science and technology and ensure its mission to nurture creative and entrepreneurial leaders through a broad education in diverse disciplines.

NTU is committed to high standards of corporate governance, professionalism, integrity and commitment at all levels, underpinned by strong internal controls and risk management systems.

Governance Evaluation Checklist

In addition to the application of good governance practices as a company and registered charity (Reg. No 01955), we have, as an institution of public character (“IPC”), adopted best practices in key areas of governance that are closely aligned to the principles and guidelines in the Code of Governance for Charities and Institutions of a Public Character (the “Code”). In line with the disclosure requirement by the Charity Council that all IPCs are required to disclose the extent of their compliance with the Code, NTU’s Governance Evaluation Checklist can be found at the Charity Portal website (www.charities.gov.sg).

Board of Trustees

The NTU Board of Trustees is the highest governing organ within the University’s governance framework. The Board comprises 19 members appointed by the Minister for

Education, and is chaired by Mr Koh Boon Hwee. Our Board of Trustees includes eminent business leaders, academics, alumni, entrepreneurs and professionals from the public service and private sectors. Each member is appointed on the strength of his/her calibre, experience, stature and ability to contribute to NTU, and brings with him/her independent judgment on issues of strategy, performance, resource allocation and risk and compliance, as well as valuable relationships and networks which are essential for the growth of NTU.

The Board of Trustees is responsible for ensuring that the University acts in the furtherance of its objectives in education and research, and properly accounts and safeguards the funds and assets of the University. The Board of Trustees works closely with the management and stakeholders of the University to shape the vision, chart the major directions, and develop programmes and initiatives to produce a strong and enduring impact for the University, and for Singapore and beyond. The Board also approves the annual budget, the use of the University’s operating reserves and the annual audited financial statements of NTU, among other responsibilities.

The NTU Board of Trustees has in place a framework with systems and processes for an effective Board based on the following governance principles:

1. Effective recruitment and induction of Trustees. The Nominating Committee is delegated the responsibility of recommending suitable candidates and has in place an induction programme comprising interactive briefing sessions. In addition, a Board Manual is available.
2. Board Committees are structured to assist the Board to fulfil its governance role, tapping each Trustee’s competencies, skills and experience.
3. The Board works with management to set the vision, mission and strategy of NTU.
4. The Board has an executive succession plan tailored to reflect NTU’s current strategy and organisation.
5. The Board has a system for effective consultation and decision-making with executive sessions and board meetings scheduled in advance, professional expertise

advice available, internal guidelines and procedures for conduct of board meetings and obtaining board approvals via circulation, and a Trustees’ portal as a secured web-based resource centre for information relevant to the Board.

6. The Board evaluates and reviews its own performance and has appointed an independent third party to collate and analyse the returns of the Trustees.
7. The Board delineates roles and responsibilities between Board and Management. All members of the Board, including the Chairman, are non-executive with the exception of the President of NTU. This ensures Board independence from management.
8. The Board has a rotation plan for continuous self-renewal, with staggering of Trustees’ terms to ensure continuity. There are policy and procedures for nomination and retirement of Trustees to ensure a formal board nomination and election.

Board Committees

Nine Board Committees are established to support the Board. These are the Academic Affairs Committee, Alumni and Development Committee, Audit Committee, Campus Planning Committee, Enterprise Committee, Finance Committee, Investment Committee, Nominating Committee and Remuneration Committee.

The roles of the Board Committees are briefly described below:

- The Academic Affairs Committee provides oversight and policy guidance for and directly supports the academic concerns of the University as well as the management of faculty and related matters.
- The Alumni and Development Committee provides oversight of issues relating to the advancement of the university as a great university founded on science and technology and its relationship with its students, alumni and external communities.

- The Audit Committee provides oversight of the implementation and maintenance of the University’s financial accounting and internal controls.
- The Campus Planning Committee provides advice on the NTU Campus Master Plan for all NTU campuses and oversight, guidance and best practices for planning and development.
- The Enterprise Committee provides oversight and policy guidance for and directly supports the University’s strategic directions and policies on innovation, technology transfer and entrepreneurship.
- The Finance Committee provides oversight of the financial management of the University.
- The Investment Committee oversees the management and investment of the funds of the University.
- The Nominating Committee nominates suitable persons to serve on the Board and committees.
- The Remuneration Committee provides oversight and policy guidance in employee compensation matters.

The Committees operate based on the principle of delegated authority from the Board and are required to observe their respective Terms of Reference as set by the Board. The Terms of Reference of each of these Committees set out the role, powers and rules applicable to these Committees. Where necessary, non-Board members who have expertise in their respective fields are also co-opted to enhance the deliberations and decision-making process of some of the Board Committees.

University Leadership

The President is the University’s Chief Executive Officer as well as its academic and administrative head. He is accountable to the Board for the conduct, coordination and quality of all of NTU’s programmes and for their future development. He has the authority to perform all acts which are necessary to give effect to the policies and statutes of the Board.

The Provost is the Chief Academic and Budget Officer of the University appointed by the President with the approval of the Board of Trustees. The Provost is responsible for the University’s academic endeavours and development. This includes graduate and undergraduate education, research, faculty development, student life, external academic liaison and coordination of supporting administrative efforts. He deputises for the President in his absence.

Policies to Manage Conflicts of Interest

Members of the Board of Trustees and staff are required in their respective capacities to act at all times in the best interest of the University. Clear policies and procedures are designed to prevent and address potential conflict-of-interest situations while promoting ethical business conduct of faculty and staff.

Trustees have a fiduciary duty not to allow themselves to get into a position where there is a conflict between what they ought to do for NTU and what they might do for themselves. The NTU Board of Trustees subscribes to a code of conduct to uphold a high standard of integrity and commitment in serving the University and in the event of a conflict of interest, members of the Board shall recuse themselves from decisions where such a conflict exists.

In addition, NTU’s Articles of Association contain provisions for the management and avoidance of conflicts of interest by members of its Board of Trustees. Such provisions include (a) permitting a Board member to be interested in any transaction with NTU provided that the member has declared the nature of the interest to the Board of Trustees and abstains from participating in the Board’s decision in respect of the transaction concerned, (b) permitting a Board member, or a firm associated with the member, to act in any professional capacity for the University and to be remunerated for professional services as if the Board member was not a Trustee, and (c) permitting a Board member to be reimbursed for out-of-pocket expenses, travelling and other expenses properly incurred by the Board member in attending and returning from meetings of the Board of Trustees, any of its committees, or any general

meeting of the University or otherwise in connection with the affairs of the University. NTU’s Articles expressly stipulate that Board members shall not receive any remuneration for services rendered by them as members of the Board of Trustees.

Under the University Code of Conduct, faculty and staff owe their primary professional allegiance to the University. To protect the University and its mission, all faculty and staff must comply with policies on conflict of interest as laid down from time to time. The current Policy requires faculty and staff to ensure that their private activities and interests do not conflict with their professional obligations to the University. They should take care to avoid conflict between their own personal interests and the interests of the University and should avoid or withdraw from situations where there may be a perception of such conflict. Where there is potential violation of the Policy, the faculty or staff shall fully and frankly disclose the nature and extent of their interest to the University as soon as possible.

REPORT OF TRUSTEES

The Board of Trustees present their report to the members together with the audited financial statements of Nanyang Technological University (the University Company) for the financial year ended 31 March 2011.

Trustees

The Trustees in office at the date of this report are as follows:

Mr Koh Boon Hwee	(Chairman)
Mr Alwi Bin Abdul Hafiz	
Mr Chia Ban Seng	
Ms Jennie Chua	
Mr Goh Geok Ling	
Mr Kwek Leng Joo	
Mrs Lee Suet Fern	
Mrs Tan Ching Yee	
Ms Lien Siaou-Sze	
Mr Lim Chuan Poh	
Prof Haresh Shah	
Mr Inderjit Singh	
Mr Ernest Wong	
Mr Edmund Cheng	
Mr Lim Chee Onn	
Prof Alexander JB Zehnder	
Mr Wong Yew Meng	
Dr Su Guaning	(Resigned on 30 June 2011)
Sir Keith O’Nions	(Appointed on 17 March 2011)
Prof Bertil Andersson	(Appointed on 1 July 2011)

Arrangements to Enable Trustees to Acquire Shares and Debentures

Neither at the end of nor at any time during the financial year was the University Company a party to any arrangement whose object was to enable the Trustees of the University Company to acquire benefits by means of the acquisition of shares in, or debentures of, the University Company or any other body corporate.

Trustees’ Interests

As the University Company is limited by guarantee, there are no matters to be disclosed under Section 201(6)(f) and (g), Section 201(6A)(g) and (h), Section 201(11) and Section 201(12) of the Singapore Companies Act, Chapter 50.

Trustee Contractual Benefits

Since the end of the previous financial year, no Trustee has received or become entitled to receive a benefit by reason of a contract made by the University Company or a related corporation with the Trustee or with a firm of which he is a member or with a company in which he has a substantial financial interest, except as disclosed in Note 28 to the financial statements.

Auditors

The retiring auditors, KPMG LLP, will not be seeking re-appointment.

On behalf of the Board of Trustees



Mr Koh Boon Hwee
Chairman of the Board of Trustees
Trustee



Prof Bertil Andersson
President of Nanyang Technological University
Trustee

18 July 2011

STATEMENT BY TRUSTEES

In our opinion:

- (a) the financial statements set out on pages 69 to 111 are drawn up so as to give a true and fair view of the state of affairs of the Group and the University Company as at 31 March 2011, and the results, changes in funds and reserves and cash flows of the Group and of the changes in funds and reserves of the University Company for the year then ended on that date in accordance with the provisions of the Singapore Companies Act, Chapter 50 and Singapore Financial Reporting Standards; and
- (b) at the date of this statement, there are reasonable grounds to believe that the University Company will be able to pay its debts as and when they fall due.

The Board of Trustees has, on the date of this statement, authorised these financial statements for issue.

On behalf of the Board of Trustees



Mr Koh Boon Hwee
Chairman of the Board of Trustees
Trustee



Prof Bertil Andersson
President of Nanyang Technological University
Trustee

18 July 2011

INDEPENDENT AUDITORS' REPORT

Members of the University Company
Nanyang Technological University

Report on the financial statements

We have audited the accompanying financial statements of Nanyang Technological University (the University Company) and its subsidiaries (the Group), which comprise the balance sheets of the Group and the University Company as at 31 March 2011, and the statement of comprehensive income, statement of changes in funds and reserves and statement of cash flows of the Group and the statement of changes in funds and reserves of the University Company for the year then ended and a summary of significant accounting policies and other explanatory notes, as set out on pages 69 to 111.

Management's responsibility for the financial statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with the provisions of the Singapore Companies Act, Chapter 50 (the Act) and Singapore Financial Reporting Standards, and for devising and maintaining a system of internal accounting controls sufficient to provide a reasonable assurance that assets are safeguarded against loss from unauthorised use or disposition; and transactions are properly authorised and that they are recorded as necessary to permit the preparation of true and fair profit and loss accounts and balance sheets and to maintain accountability of assets.

Auditors' responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with Singapore Standards on Auditing. Those Standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgements, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation of the financial statements that give a true and fair view in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the consolidated financial statements of the Group and the balance sheet and statement of changes in funds and reserves of the University Company are properly drawn up in accordance with the provisions of the Act and Singapore Financial Reporting Standards to give a true and fair view of the state of affairs of the Group and of the University Company as at 31 March 2011 and the results, changes in funds and reserves and cash flows of the Group and changes in funds and reserves of the University Company for the year ended on that date.

Report on other legal and regulatory requirements

In our opinion, the accounting and other records required by the Act to be kept by the University Company and by those subsidiaries incorporated in Singapore of which we are the auditors have been properly kept in accordance with the provisions of the Act.

During the course of our audit, nothing has come to our notice that caused us to believe that:

- (a)

the University Company did not comply with the requirements of regulation 15 (Fund-raising expenses) in the Charities (Institutions of a Public Character) Regulations 2007; and
- (b)

the donations and other receipts of the University Company were not used for approved projects and the purposes intended.

KPMG LLP

KPMG LLP

Public Accountants and

Certified Public Accountants

Singapore
18 July 2011

BALANCE SHEETS

As at 31 March 2011

		Group		University Company	
	Note	2011 \$'000	2010 \$'000	2011 \$'000	2010 \$'000
Non-current assets					
Property, plant and equipment	3	1,190,743	1,262,932	1,188,818	1,261,674
Prepaid lease	4	3,599	3,765	3,599	3,765
Subsidiaries	5	-	-	791	791
Available-for-sale financial assets		429	1,487	-	-
Student loans	6	4,540	6,274	4,540	6,274
Finance lease receivables	7	22,994	23,485	22,994	23,485
		1,222,305	1,297,943	1,220,742	1,295,989
Current assets					
Derivative financial instruments	8	5,307	417	5,307	417
Loan to a subsidiary	9	-	-	3,000	3,000
Student loans	6	3,941	3,895	3,941	3,895
Trade and other receivables	10	253,451	129,209	249,885	125,067
Financial assets at fair value through income and expenditure	11	959,857	678,535	959,857	678,535
Finance lease receivables	7	491	479	491	479
Cash and cash equivalents	12	986,134	1,075,335	970,682	1,061,800
		2,209,181	1,887,870	2,193,163	1,873,193
Total assets		3,431,486	3,185,813	3,413,905	3,169,182
Current liabilities					
Derivative financial instruments	8	-	449	-	449
Trade and other payables	13	179,741	129,943	174,760	126,031
Grant received in advance – Operating Grants	14	864	541	-	-
Grant received in advance – IT and F&E	15	24,899	22,013	24,899	21,360
Short-term borrowings	16	129,000	161,900	129,000	161,900
Deferred tuition and other fees		58,624	54,303	58,624	54,303
Research grants received in advance	17	67,411	60,350	66,584	60,102
Current year tax payable		317	977	-	-
		460,856	430,476	453,867	424,145
Non-current liabilities					
Deferred capital grants	18	839,347	876,564	837,819	875,631
Other non-current liabilities		3,086	2,757	3,086	2,757
Sinking fund received in advance	15	170,230	134,931	170,230	134,931
		1,012,663	1,014,252	1,011,135	1,013,319
Total liabilities		1,473,519	1,444,728	1,465,002	1,437,464
Net assets		1,957,967	1,741,085	1,948,903	1,731,718
Funds and reserves					
Capital account	19	200,858	200,858	200,858	200,858
Accumulated surplus					
- General fund		471,703	411,188	462,660	401,634
- Endowment fund	20	893,523	797,088	893,898	797,088
- Other restricted fund		391,883	331,951	391,487	332,138
		1,957,967	1,741,085	1,948,903	1,731,718
Funds managed on behalf of the Ministry	21	225,125	228,440	225,125	228,440
Represented by:					
Net assets managed on behalf of the Ministry	21	225,125	228,440	225,125	228,440

The accompanying notes form an integral part of these financial statements.

STATEMENT OF COMPREHENSIVE INCOME

Year ended 31 March 2011

Group	Note	General fund		Endowment fund		Other restricted fund		Total	
		2011	2010	2011	2010	2011	2010	2011	2010
		\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
Income									
Tuition and									
other fees		208,875	201,313	-	-	31,345	26,956	240,220	228,269
Rental income		1,633	1,432	-	-	27,337	26,238	28,970	27,670
Research grants	17	189,740	161,364	-	-	-	-	189,740	161,364
Interest income	22	2,870	2,428	217	774	507	524	3,594	3,726
Donations		-	-	36,585	14,331	28,877	28,343	65,462	42,674
Other grants		1,369	2,647	-	-	2,312	6,620	3,681	9,267
Sundry income		28,052	18,204	-	-	35,318	28,368	63,370	46,572
Deferred capital									
grants amortised									
(non-ministry)	18	7,611	8,306	-	-	4,487	3,632	12,098	11,938
Total Income									
before profit on									
investments		440,150	395,694	36,802	15,105	130,183	120,681	607,135	531,480
Profit on									
investments	23	12,822	11,778	58,919	54,051	141	135	71,882	65,964
Total income									
after profit on									
investments		452,972	407,472	95,721	69,156	130,324	120,816	679,017	597,444
Expenditure									
Expenditure on									
manpower		589,540	534,440	897	846	54,166	44,436	644,603	579,722
Teaching/									
Research		117,318	108,455	-	-	51,963	28,116	169,281	136,571
Administration		65,690	59,490	-	-	31,399	30,457	97,089	89,947
Maintenance		68,017	59,419	-	-	10,535	10,605	78,552	70,024
Library books									
and									
periodicals		6,007	7,059	-	-	-	-	6,007	7,059
Depreciation of									
property,									
plant and									
equipment	3	163,523	158,122	-	-	8,940	6,740	172,463	164,862
Amortisation of									
prepaid lease	4	166	166	-	-	-	-	166	166
Balance carried									
forward		1,010,261	927,151	897	846	157,003	120,354	1,168,161	1,048,351

The accompanying notes form an integral part of these financial statements.

STATEMENT OF COMPREHENSIVE INCOME

Year ended 31 March 2011

	Note	General fund		Endowment fund		Other restricted fund		Total	
		2011 \$'000	2010 \$'000	2011 \$'000	2010 \$'000	2011 \$'000	2010 \$'000	2011 \$'000	2010 \$'000
Group									
Balance brought forward									
		1,010,261	927,151	897	846	157,003	120,354	1,168,161	1,048,351
Capital expenditure not capitalised									
		19,566	28,912	-	-	1,477	3,588	21,043	32,500
Loss on disposal of property, plant and equipment									
		537	871	-	-	29	185	566	1,056
Other expenses									
		42	877	1,638	2,216	66,856	59,336	68,536	62,429
Total expenses									
		1,030,406	957,811	2,535	3,062	225,365	183,463	1,258,306	1,144,336
Surplus/(Deficit) before grants from ministries									
	24	(577,434)	(550,339)	93,186	66,094	(95,041)	(62,647)	(579,289)	(546,892)
Grants from ministries									
Development grants									
	15	26,354	44,567	-	-	-	-	26,354	44,567
Operating grants									
	25	511,668	488,256	-	-	-	-	511,668	488,256
Other grants									
		1,739	946	28,147	23,833	75,371	47,682	105,257	72,461
Deferred capital grants amortised									
	18	152,385	148,104	-	-	2,395	1,624	154,780	149,728
Total grants from ministries									
		692,146	681,873	28,147	23,833	77,766	49,306	798,059	755,012
Surplus/(Deficit) after grants from ministries									
		114,712	131,534	121,333	89,927	(17,275)	(13,341)	218,770	208,120
Taxation									
	26	291	977	-	-	-	-	291	977
Surplus/(Deficit) for the year									
		114,421	130,557	121,333	89,927	(17,275)	(13,341)	218,479	207,143
Other comprehensive income, net of tax									
		-	-	-	-	-	-	-	-
Total comprehensive income / (loss) for the year									
		114,421	130,557	121,333	89,927	(17,275)	(13,341)	218,479	207,143

The accompanying notes form an integral part of these financial statements.

STATEMENTS OF CHANGES IN FUNDS AND RESERVES

Year ended 31 March 2011

Group	Accumulated surplus				Total \$'000
	Capital account \$'000	General fund \$'000	Endowment fund \$'000	Other restricted fund \$'000	
At 1 April 2009	200,858	294,621	719,788	320,105	1,535,372
Total comprehensive income / (loss) for the year	-	130,557	89,927	(13,341)	207,143
Transfer from endowment fund	-	7,056	(12,627)	5,571	-
Transfer to research grants received in advance	-	(1,298)	-	-	(1,298)
Transfer to deferred capital grants	-	(33)	-	-	(33)
Utilisation of other restricted fund	-	-	-	(298)	(298)
Transfer to other restricted fund	-	(22,883)	-	22,883	-
Transfer to general fund	-	3,154	-	(3,154)	-
Fair value adjustment	-	14	-	185	199
At 31 March 2010	200,858	411,188	797,088	331,951	1,741,085
At 1 April 2010	200,858	411,188	797,088	331,951	1,741,085
Total comprehensive income / (loss) for the year	-	114,421	121,333	(17,275)	218,479
Transfer from endowment fund	-	13,091	(24,898)	11,807	-
Transfer to research grants received in advance	-	(1,394)	-	-	(1,394)
Transfer to deferred capital grants	-	(15)	-	-	(15)
Utilisation of other restricted fund/general fund	-	(160)	-	(109)	(269)
Transfer to other restricted fund	-	(73,387)	-	73,387	-
Transfer to general fund	-	7,968	-	(7,968)	-
Fair value adjustment	-	(9)	-	90	81
At 31 March 2011	200,858	471,703	893,523	391,883	1,957,967

The accompanying notes form an integral part of these financial statements.

STATEMENTS OF CHANGES IN FUNDS AND RESERVES

Year ended 31 March 2011

University Company	Accumulated surplus				Total \$'000
	Capital account \$'000	General fund \$'000	Endowment fund \$'000	Other restricted fund \$'000	
At 1 April 2009	200,858	289,862	719,788	319,961	1,530,469
Total comprehensive income / (loss) for the year	-	125,762	89,927	(13,010)	202,679
Transfer from endowment fund	-	7,056	(12,627)	5,571	-
Transfer to research grants received in advance	-	(1,298)	-	-	(1,298)
Transfer to deferred capital grants	-	(33)	-	-	(33)
Utilisation of other restricted fund	-	-	-	(298)	(298)
Transfer to other restricted fund	-	(22,883)	-	22,883	-
Transfer to general fund	-	3,154	-	(3,154)	-
Fair value adjustment	-	14	-	185	199
At 31 March 2010	200,858	401,634	797,088	332,138	1,731,718
At 1 April 2010	200,858	401,634	797,088	332,138	1,731,718
Total comprehensive income / (loss) for the year	-	114,932	121,708	(17,858)	218,782
Transfer from endowment fund	-	13,091	(24,898)	11,807	-
Transfer to research grants received in advance	-	(1,394)	-	-	(1,394)
Transfer to deferred capital grants	-	(15)	-	-	(15)
Utilisation of other restricted fund/general fund	-	(160)	-	(109)	(269)
Transfer to other restricted fund	-	(73,387)	-	73,387	-
Transfer to general fund	-	7,968	-	(7,968)	-
Fair value adjustment	-	(9)	-	90	81
At 31 March 2011	200,858	462,660	893,898	391,487	1,948,903

The accompanying notes form an integral part of these financial statements.

CONSOLIDATED CASH FLOWS STATEMENT

Year ended 31 March 2011

	Note	2011 \$'000	2010 \$'000
Operating activities			
Deficit before grants from ministries		(579,289)	(546,892)
Adjustments for:			
Research grant income		(189,740)	(161,364)
Depreciation of property, plant and equipment		172,463	164,862
Amortisation of prepaid lease		166	166
Loss on disposal of property, plant and equipment		566	1,056
Profit on investments		(71,882)	(65,964)
Deferred capital grants amortised (non-ministry)		(12,098)	(11,938)
Interest income		(3,594)	(3,726)
Provision (made)/reversed		(21,300)	4,101
		(704,708)	(619,699)
Changes in working capital:			
Other payables		54,085	36,922
Trade and other receivables		(17,746)	(10,812)
Deferred tuition and other fees		4,321	4,166
Loans extended to students		1,769	4,364
Cash generated from operating activities		(662,279)	(585,059)
Income taxes paid		(951)	-
Cash flows used in operating activities		(663,230)	(585,059)
Financing activities			
Sinking fund received		29,607	38,386
IT and F&E grant received		36,617	44,162
Research grants received		213,156	164,592
Operating grants received, net of payment of goods and service tax expense on tuition fees and tuition grants		482,763	592,415
Development grants and related income received		56,632	100,716
Ministry grants received		100,783	82,368
Utilisation of other restricted funds		(109)	-
Net repayment from borrowings		(32,900)	(10,100)
Cash flows from financing activities		886,549	1,012,539
Investing activities			
Acquisition of property, plant and equipment		(100,783)	(155,835)
Purchase of other financial assets		(245,222)	(146,729)
Proceeds from sale of other financial assets		29,048	84,294
Increase/(decrease) in cash held by fund managers	12	2,453	(4,785)
Interest received		1,984	3,879
Cash flows used in investing activities		(312,520)	(219,176)
Net (decrease)/ increase in cash and cash equivalents		(89,201)	208,304
Cash and cash equivalents at beginning of the year		1,075,335	867,031
Cash and cash equivalents at end of the year	12	986,134	1,075,335

The accompanying notes form an integral part of these financial statements.

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

These notes form an integral part of the financial statements.

The financial statements were authorised for issue by the Board of Trustees on 18 July 2011.

1 Domicile and Activities

Nanyang Technological University (the University Company) established under the Singapore Companies Act, Chapter 50, is domiciled in Singapore. The University Company's registered office and place of business is located at 50 Nanyang Avenue, Singapore 639798.

The University Company is principally engaged in the advancement and dissemination of knowledge, the promotion of research and scholarships and the conferring and awarding of degrees, diplomas and certificates. The principal activities of the subsidiaries are set out in Note 5.

As the operations of the University Company is substantially funded by the Ministry of Education (MOE or the Ministry) through government grants, with MOE having the power to appoint and remove members to the Board of Trustees of the University Company, MOE is regarded as the parent entity.

The consolidated financial statements relate to the University Company and its subsidiaries (referred to as the Group).

2 Summary of Significant Accounting Policies

2.1 Basis of preparation

- (a) Statement of compliance
The financial statements have been prepared in accordance with Singapore Financial Reporting Standards (FRS).
- (b) Basis of measurement
The financial statements have been prepared in historical cost basis except otherwise disclosed below.
- (c) Functional and presentation currency
The financial statements are presented in Singapore dollars which is the Group's functional currency. All financial information presented in Singapore dollars has been rounded to the nearest thousand, unless otherwise stated.
- (d) Use of estimates and judgements
The preparation of financial statements in conformity with FRS requires management to make judgements, estimates and assumptions that affect the application of accounting policies and the reported amounts of assets, liabilities, income and expenses. Actual results may differ from these estimates.

Estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognised in the period in which the estimates are revised and in any future periods affected.

In particular, information about significant areas of estimation, uncertainty and critical judgements in applying accounting policies that have the most significant effect on the amount recognised in the financial statements are described in the following notes:

- Note 2.7 – measurement of the recoverable amounts of non-financial assets
The valuation of property, plant and equipment is measured based on their recoverable amounts as described in Note 2.7. Where the carrying values of the property, plant and equipment exceed the recoverable amounts, the assets are written down to their recoverable amounts.

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

2 Summary of Significant Accounting Policies (cont'd)

2.1 Basis of preparation (cont'd)

(d) Use of estimates and judgements (cont'd)

- Notes 2.8, 8 and 11 – valuation of financial instruments

Derivative financial instruments

The fair value of derivatives (foreign currency forwards) is estimated by discounting the difference between the contractual forward price and the current forward price for the residual period to maturity of the contract.

Financial assets at fair value through income and expenditure

The fair values of financial instruments traded in active markets are based on quoted market prices at the balance sheet date. The valuation methodologies for investments in unquoted equities are set out in Note 11.

Information about assumptions and estimation uncertainties that have a significant risk of resulting in a material adjustment within the next financial year are included in the following notes:

- Note 2.10 – measurement of provisions

Provision for attrition

Provision for undergraduate funding relates to the adjustment to the undergraduate output funding from MOE in the event the University achieves fewer undergraduates than MOE's output target. The provision is based on the University's actual and projected number of undergraduates.

(e) Changes in accounting policies

New/revised standards and interpretations

The Group adopted new/revised standards and interpretations that came into effect from 1 April 2010. The initial application of those standards and interpretations does not have any material impact on the financial statements.

2.2 Consolidation

Business combinations

Business combinations are accounted for using the acquisition method as at the acquisition date, which is the date on which control is transferred to the Group. Control is the power to govern the financial and operating policies of an entity so as to obtain benefits from its activities. In assessing control, the Group takes into consideration potential voting rights that are currently exercisable.

The consideration transferred does not include amounts related to the settlement of pre-existing relationships. Such amounts are generally recognised in the statement of comprehensive income.

Costs related to the acquisition, other than those associated with the issue of debt or equity securities, that the Group incurs in connection with a business combination are expensed as incurred.

Any contingent consideration payable is recognised at fair value at the acquisition date. If the contingent consideration is classified as funds and reserves, it is not remeasured and settlement is accounted for within funds and reserves. Otherwise, subsequent changes to the fair value of the contingent consideration are recognised in the statement of comprehensive income.

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

2 Summary of Significant Accounting Policies (cont'd)

2.2 Consolidation (cont'd)

Subsidiaries

Subsidiaries are entities controlled by the Group. The financial statements of subsidiaries are included in the consolidated financial statements from the date that control commences until the date that control ceases.

The accounting policies of subsidiaries have been changed where necessary to align them with the policies adopted by the Group.

Transactions eliminated on consolidation

Intra-group balances and transactions, and any unrealised income or expenses arising from intra-group transactions, are eliminated in preparing the consolidated financial statements.

Accounting for subsidiaries

Investment in subsidiaries are stated in the University Company's balance sheet at cost less accumulated impairment losses.

2.3 Foreign currencies

Foreign currency transactions

Transactions in foreign currencies are translated to the respective functional currencies of Group entities at the exchange rate at the date of the transaction. Monetary assets and liabilities denominated in foreign currencies at the reporting date are retranslated to the functional currency at the exchange rate at the reporting date. Non-monetary assets and liabilities denominated in foreign currencies that are measured at fair value are retranslated to the functional currency at the exchange rate at the date that the fair value was determined.

Foreign currency differences arising on retranslation are recognised in the statement of comprehensive income.

Foreign operations

The assets and liabilities of foreign operations are translated to Singapore dollars at exchange rates prevailing at the reporting date. The income and expenses of foreign operations are translated to Singapore dollars at exchange rates ruling at the dates of the transactions.

Foreign currency differences are recognised in the foreign currency translation reserve. When a foreign operation is disposed of, in part or in full, the relevant amount in the foreign exchange translation reserves is transferred to the statement of comprehensive income as part of the gain or loss on disposal.

2.4 Funds

Assets and liabilities of all funds are pooled in the Balance Sheet.

General and restricted funds

Income and expenditure are generally accounted for under the General Fund in the statement of comprehensive income. The use of these reserves are subject to the approval of the Board of Trustees.

The income and expenditure relating to funds that are set up for specific purposes are accounted for under Other Restricted Fund in the statement of comprehensive income.

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

2 Summary of Significant Accounting Policies (cont'd)

2.4 Funds (cont'd)

General and restricted funds (cont'd)

The following funds termed as “Other Restricted Fund” are set up and disclosed separately from the University Company's general fund:

- (i) funds created from donations from external bodies for special purposes;
- (ii) funds created from grants received for carrying out activities under special arrangements; and
- (iii) funds maintained separately to account for the self-financing activities carried out by the University Company.

The use of these funds are governed by the terms and conditions set out by the respective funds.

The income and expenditure of General Fund and Other Restricted Fund are included in the statement of comprehensive income.

Endowment fund

Grants from ministries and statutory boards and donations from external sources are taken to the statement of comprehensive income in the year in which such grants and donations are received. Income and expenditure arising from the management of the Endowment Fund are taken to the statement of comprehensive income of the Endowment Fund.

2.5 Grants and sinking fund

Grants and sinking fund from the Ministry, other ministries and statutory boards and contributions received/receivable from other organisations for the purchase of depreciable assets or to finance research or capital projects are taken to the grants received in advance account in the first instance. They are taken to the deferred capital grants account upon the utilisation of the grants for purchase of assets, which are capitalised, or to the statement of comprehensive income for purchase of assets which are written off in the year of purchase.

Deferred capital grants are recognised in the statement of comprehensive income over the periods necessary to match the depreciation, write off and/or impairment loss of the assets purchased with the related grants. Upon the disposal of fixed assets, the balance of the related deferred capital grants is recognised in the statement of comprehensive income to match the net book value of the fixed assets written off.

Debt grant is recognised when there is reasonable assurance that the University Company will comply with the conditions attaching to them and that the grants will be received.

IT and F&E grants received from the Ministry are for the purchase of information technology appliances and furniture and equipment to support teaching and administrative function of the University Company. These grants are taken to the deferred capital grants account upon the utilisation of the grants for purchase of assets, which are capitalised, or to the statement of comprehensive income for purchase of assets which are written off in the year of purchase.

Grants from the Ministry and other ministries to meet the current year's operating expenses are recognised as income in the same year these operating expenses were incurred.

All grants and contributions are accounted for on the accrual basis.

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

2 Summary of Significant Accounting Policies (cont'd)

2.5 Grants and sinking fund (cont'd)

Jobs credit scheme

Cash grants received from the government in relation to the Jobs Credit Scheme are recognised upon receipt. Such grants are provided to defray the wage costs incurred and are offset against staff costs in the financial statements.

2.6 Property, plant and equipment

Recognition and measurement

Property, plant and equipment are stated at cost less accumulated depreciation and impairment losses except for land alienated to the University Company which are stated at values provided by the Government. Donated assets are stated at valuation at initial recognition.

Any increase in the revaluation amount of land alienated to the University Company and assets purchased using funds from self-financing centres are credited directly to the Capital Account unless it offsets a previous decrease in value recognised in the statement of comprehensive income. A decrease in value is recognised in the statement of comprehensive income where it exceeds the increase previously recognised in the Capital Account. Upon disposal, any related revaluation surplus is transferred from the Capital Account to accumulated surplus and is not taken into account in arriving at the gain or loss on disposal.

Cost includes expenditures that are directly attributable to the acquisition of the asset. The cost of self-constructed assets includes the cost of materials and direct labour, any other costs directly attributable to bringing the asset to a working condition for its intended use, and the costs of dismantling and removing the items and restoring the site on which they are located. Purchased software that is integral to the functionality of the related equipment is capitalised as part of that equipment.

When parts of an item of property, plant and equipment have different useful lives, they are accounted for as separate items (major components) of property, plant and equipment.

Property, plant and equipment costing less than \$2,000 each, renovation costing below \$100,000 and library books are generally charged to the statement of comprehensive income in the year of purchase.

The gain or loss on disposal of an item of property, plant and equipment recognised in the statement of comprehensive income is derived from the proceeds from disposal and the carrying amount of property, plant and equipment.

Subsequent cost

The cost of replacing part of an item of property, plant and equipment is recognised in the carrying amount of the item if it is probable that the future economic benefits embodied within the part will flow to the Group and its cost can be measured reliably. The costs of the day-to-day servicing of property, plant and equipment are recognised in the statement of comprehensive income as incurred.

Depreciation

Depreciation is based on the cost of an asset less its residual value. Significant components of individual assets are assessed and if a component has a useful life that is different from the remainder of that asset, that component is depreciated separately.

Depreciation is recognised in the statement of comprehensive income on a straight-line basis over the estimated useful lives of each component of an item of property, plant and equipment.

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

2 Summary of Significant Accounting Policies (cont'd)

2.6 Property, plant and equipment (cont'd)

Depreciation (cont'd)

Except for freehold land and buildings under construction which are not depreciated, depreciation on other property, plant and equipment is recognised in the statement of comprehensive income on a straight-line basis over the estimated useful lives (or lease term, if shorter) of each part of an item of property, plant and equipment.

The estimated useful lives are as follows:

Buildings and infrastructure	5 to 20 years
Renovation	5 years
Machinery, laboratory and workshop equipment	6 years
Furniture and office equipment	3 to 5 years
Transportation equipment	8 years
Others	8 years

Depreciation methods, useful lives and residual values are reviewed and adjusted as appropriate, at each reporting date.

Buildings under construction are stated at cost. Expenditure relating to the construction of projects are capitalised when incurred. No depreciation is charged on building under construction until the building under construction is completed and the related property, plant and equipment are transferred to the respective property, plant and equipment categories and depreciated accordingly.

2.7 Impairment – non-financial assets

The carrying amounts of the Group’s non-financial assets are reviewed at each reporting date to determine whether there is any indication of impairment. If any such indication exists, the asset’s recoverable amounts are estimated.

An impairment loss is recognised if the carrying amount of an asset or its cash-generating unit exceeds its recoverable amount. A cash-generating unit is the smallest identifiable asset group that generates cash flows that largely are independent from other assets and groups. Impairment losses are recognised in the statement of comprehensive income unless it reverses a previous revaluation, credited to equity, in which case it is charged to equity. Impairment losses recognised in respect of cash-generating units are allocated first to reduce the carrying amount of any goodwill allocated to the units and then to reduce the carrying amount of the other assets in the unit (group of units) on a pro rata basis.

The recoverable amount of an asset or cash-generating unit is the greater of its value in use and its fair value less costs to sell. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset or cash-generating unit. For the purpose of impairment testing, assets that cannot be tested individually are grouped together into the smallest group of assets that generates cash inflows from continuing use that are largely independent of the cash inflows of other assets or cash generating unit.

Impairment losses recognised in prior periods are assessed at each reporting date for any indications that the loss has decreased or no longer exists. An impairment loss is reversed if there has been a change in the estimates used to determine the recoverable amount. An impairment loss is reversed only to the extent that the asset’s carrying amount does not exceed the carrying amount that would have been determined, net of depreciation or amortisation, if no impairment loss had been recognised.

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

2 Summary of Significant Accounting Policies (cont'd)

2.8 Financial instruments

Non-derivative financial assets

The Group initially recognises loans and receivables and deposits on the date that they originated. All other financial assets (including assets designated at fair value through income and expenditure) are recognised initially on the trade date, which is the date that the Group becomes a party to the contractual provisions of the instrument.

The Group derecognises a financial asset when the contractual rights to the cash flows from the asset expire, or it transfers the rights to receive the contractual cash flows on the financial asset in a transaction in which substantially all the risks and rewards of ownership of the financial assets are transferred. Any interest in transferred financial assets that is created or retained by the Group is recognised as a separate asset or liability.

Financial assets and liabilities are offset and the net amount presented in the balance sheet, when, and only when, the Group has a legal right to offset the amounts and intends either to settle on a net basis or to realise the asset and settle the liability simultaneously.

The Group classifies non-derivative assets into the following categories: financial assets at fair value through income and expenditure, available-for-sale financial assets and loans and receivables.

Financial assets at fair value through income and expenditure

An instrument is classified at fair value through income and expenditure if it is acquired principally for the purpose of selling in the short term or is designated as such upon initial recognition. Financial instruments are designated at fair value through income or expenditure if the Group manages such investments and makes purchase and sale decisions based on their fair value in accordance with the Group’s documented risk management and investment strategies. Upon initial recognition, attributable transaction costs are recognised in the statement of comprehensive income when incurred. Financial instruments at fair value through income and expenditure are measured at fair value, and changes therein are recognised in the statement of comprehensive income.

Financial assets designated at fair value through income and expenditure comprise fixed income, quoted equity, unquoted equity and other investments.

Loans and receivables

Loans and receivables are financial assets with fixed or determinable payments that are not quoted in an active market. Such assets are recognised initially at fair value plus any directly attributable transaction costs. Subsequent to initial recognition, loans and receivables are measured at amortised cost using the effective interest method, less any impairment losses.

Loans and receivables comprise trade and other receivables, student loans, finance lease receivables, grant receivables and cash and cash equivalents.

Cash and cash equivalents comprise cash balances and bank deposits.

Available-for-sale financial assets

The Group’s investments in certain equity securities are classified as available-for-sale financial assets if they are not classified in any of the other categories. Subsequent to initial recognition, they are measured at fair value and changes therein, other than for impairment losses, are recognised directly in equity. When an investment is derecognised, the cumulative gain or loss in equity is transferred to the statement of comprehensive income.

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

2 Summary of Significant Accounting Policies (cont'd)

2.8 Financial instruments (cont'd)

Non-derivative financial liabilities

The Group recognises financial liabilities (including liabilities designated at fair value through income or expenditure on the trade date at which the Group becomes a party to the contractual provisions of the instrument.

The Group derecognises a financial liability when its contractual obligations are discharged or cancelled or expire.

Financial assets and liabilities are offset and the net amount presented in the balance sheet when, and only when, the Group has a legal right to offset the amounts and intends either to settle on a net basis or to realise the asset and settle the liability simultaneously.

The Group classifies non-derivative financial liabilities into the other financial liabilities category. Such financial liabilities are recognised initially at fair value plus any directly attributable transaction costs. Subsequent to initial recognition, these financial liabilities are measured at amortised cost using the effective interest method.

Non-derivative financial liabilities comprise loans and borrowings, and trade and other payables.

Bank overdrafts that are repayable on demand and form an integral part of the Group's cash management are included as a component of cash and cash equivalents for the purpose of the statement of cash flows.

Derivative financial instruments and hedging instruments

The Group holds derivative financial instruments, through its international fund managers, to hedge its foreign currency and interest rate risk exposures. Embedded derivatives are separated from the host contract and accounted for separately if the economic characteristics and risks of the host contract and the embedded derivative are not closely related, a separate instrument with the same terms as the embedded derivative would meet the definition of a derivative, and the combined instrument is not measured at fair value through income and expenditure.

Derivatives are recognised initially at fair value; attributable transaction costs are recognised in the statement of comprehensive income when incurred. Subsequent to initial recognition, derivatives are measured at fair value, and changes therein accounted for in the statement of comprehensive income.

Impairment of financial assets

A financial asset is assessed at each reporting date to determine whether there is any objective evidence that it is impaired. A financial asset is considered to be impaired if objective evidence indicates that one or more events have had a negative effect on the estimated future cash flows of that asset.

An impairment loss in respect of a financial asset measured at amortised cost is calculated as the difference between its carrying amount, and the present value of the estimated future cash flows discounted at the original effective interest rate. An impairment loss in respect of an available-for-sale financial asset is calculated by reference to its current fair value.

Individually significant financial assets are tested for impairment on an individual basis. The remaining financial assets are assessed collectively in groups that share similar credit risk characteristics.

All impairment losses are recognised in the statement of comprehensive income. Any accumulated loss in respect of an available-for-sale financial asset recognised previously in equity is transferred to the statement of comprehensive income.

Impairment losses once recognised in the statement of comprehensive income in respect of available-for-sale equity securities are not reversed through the statement of comprehensive income. Any subsequent increase in fair value of such assets is recognised directly in equity.

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

2 Summary of Significant Accounting Policies (cont'd)

2.9 Employee benefits

Defined contribution plans

A defined contribution plan is a post-employment benefit plan under which an entity pays fixed contributions into a separate entity and will have no legal or constructive obligation to pay further amounts. Obligations for contributions to defined contribution pension plans are recognised as an employee benefit expense in the statement of comprehensive income in the periods during which services are rendered by employees.

Short-term employee benefits

Short-term employee benefit obligations, including accumulated compensated absences, are measured on an undiscounted basis and are expensed as the related services are provided.

2.10 Provisions

A provision is recognised if, as a result of a past event, the Group has a present legal or constructive obligation that can be estimated reliably, and it is probable that an outflow of economic benefits will be required to settle the obligation. Provisions are determined by discounting the expected future cash flows at a pre-tax rate that reflects current market assessments of the time value of money and the risks specific to the liability.

2.11 Income tax

Income tax expense comprises current and deferred tax. Income tax expense is recognised in the statement of comprehensive income except to the extent that it relates to items recognised directly in equity, in which case it is recognised in equity.

Current tax is the expected tax payable on the taxable income for the year, using tax rates enacted or substantively enacted at the reporting date, and any adjustment to tax payable in respect of previous years.

Deferred tax is recognised in respect of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for taxation purposes. Deferred tax is not recognised for temporary differences on the initial recognition of assets or liabilities in a transaction that is not a business combination and that affects neither accounting nor taxable income or expenditure; temporary differences related to investments in subsidiaries and jointly controlled entities to the extent that it is probable that they will not reverse in the foreseeable future; and taxable temporary differences arising on the initial recognition of goodwill.

Deferred tax is measured at the tax rates that are expected to be applied to the temporary differences when they reverse, based on the laws that have been enacted or substantively enacted by the reporting date.

Deferred tax assets and liabilities are offset if there is a legally enforceable right to offset current tax liabilities and assets, and they relate to income taxes levied by the same tax authority on the same taxable entity, or on different tax entities, but they intend to settle current tax liabilities and assets on a net basis or their tax assets and liabilities will be realised simultaneously.

A deferred tax asset is recognised for unused tax losses, tax credits and deductible temporary differences, to the extent that it is probable that future taxable profits will be available against which they can be utilised. Deferred tax assets are reviewed at each reporting date and are reduced to the extent that it is no longer probable that the related tax benefit will be realised.

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

2 Summary of Significant Accounting Policies (cont'd)

2.12 Income recognition

Student fees

Income from tuition and other fees are recognised in the period in which the services are rendered.

Management fees

Management fees are recognised upon services rendered.

Donations

Unconditional donations are recognised upon receipt.

Licence fees

Licence fees are recognised in accordance with terms of licensing agreement.

Royalties

Royalties are recognised on sale, by licensor, of products using the technology granted.

Dividends

Dividends are recognised in the financial year in which the right to receive payment is established.

Rental income

Rental income receivable under operating leases is recognised in the statement of comprehensive income on a straight-line basis over the term of the lease.

2.13 Finance income and finance costs

Finance income comprises interest income on funds invested and the finance lease. Interest income on funds invested is recognised as it accrues in the statement of comprehensive income, using the effective interest method. Interest income on the finance lease is recognised in the statement of comprehensive income over the period of the lease so as to earn an approximately constant periodic rate of return on the remaining balance of the finance lease receivables for each reporting period.

Finance costs comprise interest expense on borrowings. Borrowing costs that are not directly attributable to the acquisition, construction or production of a qualifying asset are recognised in the statement of comprehensive income using the effective interest method.

2.14 Lease payments

Payments made under operating leases are recognised in the statement of comprehensive income on a straight-line basis over the term of the lease. Lease incentives received are recognised as an integral part of the total lease expense, over the term of the lease.

Determining whether an arrangement contains a lease

At inception of an arrangement, the Group determines whether such an arrangement is or contains a lease. A specific asset is the subject of a lease if fulfilment of the arrangement is dependent on the use of that specified asset. An arrangement conveys the right to use the asset if the arrangement conveys to the Group the right to control the use of the underlying asset.

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

2 Summary of Significant Accounting Policies (cont'd)

2.14 Lease payments (cont'd)

Determining whether an arrangement contains a lease (cont'd)

At inception or upon reassessment of the arrangement, the Group separates payments and other consideration required by such an arrangement into those for the lease and those for other elements on the basis of their relative fair values. If the Group concludes for a finance lease that it is impracticable to separate the payments reliably, then an asset and a liability are recognised at an amount equal to the fair value of the underlying asset. Subsequently, the liability is reduced as payments are made and an imputed finance charge on the liability is recognised using the Group's incremental borrowing rate.

2.15 Finance lease receivables

Assets held under finance lease are recognised in the balance sheet and presented as receivables net of unearned interest and after deduction of allowance for possible losses.

2.16 Key management personnel

Key management personnel of the Group are those persons having the authority and responsibility for planning, directing and controlling the activities of the entity. The Board of Trustees and senior management team are considered as key management personnel of the Group.

2.17 New standards and on interpretations not yet adopted

A number of new standards, amendments to standards and interpretations are effective for annual periods beginning after 1 April 2010, and have not been applied in preparing these financial statements. None of these are expected to have a significant effect on the financial statements of the Group.

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

3 Property, Plant and Equipment

Group	Machinery, laboratory and workshop equipment						Total \$'000
	Freehold land \$'000	Buildings and infrastructure \$'000	Buildings under construction \$'000	Renovation \$'000	Furniture and office equipment \$'000	Transportation equipment \$'000	Others \$'000
Cost							
At 1 April 2009	200,858	1,744,242	55,188	31,181	590,630	248,187	6,354
Additions	-	3,260	12,251	37,156	70,248	32,360	439
Adjustments	-	(379)	(184)	11	222	82	-
Disposals	-	(3,212)	-	(431)	(17,826)	(26,268)	(189)
Reclassifications	-	41,815	(57,469)	7,226	6,757	1,671	-
At 31 March 2010	200,858	1,785,726	9,786	75,143	650,031	256,032	6,604
Additions	-	1,470	5,743	14,944	59,592	18,473	182
Adjustments	-	-	-	-	45	12	-
Disposals	-	(625)	-	(160)	(13,295)	(13,749)	(82)
Reclassifications	-	(292)	(4,271)	1,783	710	2,070	-
At 31 March 2011	200,858	1,786,279	11,258	91,710	697,083	262,838	6,704
							4,334
							3,061,064

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

3 Property, Plant and Equipment (cont'd)

Group	Machinery, laboratory and workshop equipment						Total \$'000
	Freehold land \$'000	Buildings and infrastructure \$'000	Buildings under construction \$'000	Renovation \$'000	Furniture and office equipment \$'000	Transportation equipment \$'000	Others \$'000
Accumulated depreciation							
At 1 April 2009	-	961,591	-	21,495	414,473	205,907	1,616
Depreciation for the year	-	77,602	-	7,899	57,964	20,436	767
Disposals	-	(3,039)	-	(249)	(17,234)	(26,161)	(189)
Reclassifications	-	(40)	-	(60)	37	63	-
At 31 March 2010	-	1,036,114	-	29,085	455,240	200,245	2,194
Depreciation for the year	-	74,444	-	13,903	61,786	21,370	771
Disposals	-	(583)	-	(155)	(13,078)	(13,464)	(82)
Reclassifications	-	(131)	-	(24)	(114)	269	-
At 31 March 2011	-	1,109,844	-	42,809	503,834	208,420	2,883
							2,531
							1,870,321

Carrying amount

At 1 April 2009	200,858	782,651	55,188	9,686	176,157	42,280	4,738	1,705	1,273,263
At 31 March 2010	200,858	749,612	9,786	46,058	194,791	55,787	4,410	1,630	1,262,932
At 31 March 2011	200,858	676,435	11,258	48,901	193,249	54,418	3,821	1,803	1,190,743

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

3 Property, Plant and Equipment (cont'd)

University Company		Freehold land \$'000	Buildings and infrastructure \$'000	Buildings under construction \$'000	Renovation \$'000	Machinery, laboratory and workshop equipment \$'000	Furniture and office equipment \$'000	Transportation equipment \$'000	Others \$'000	Total \$'000
Cost										
At 1 April 2009		200,858	1,744,242	55,188	30,863	590,324	247,736	6,354	4,033	2,879,598
Additions		-	3,260	12,251	36,535	70,159	31,976	439	121	154,741
Adjustments		-	(379)	(184)	11	222	82	-	-	(248)
Disposals		-	(3,212)	-	(431)	(17,816)	(26,267)	(189)	(62)	(47,977)
Reclassifications		-	41,815	(57,469)	7,226	6,757	1,671	-	-	-
At 31 March 2010		200,858	1,785,726	9,786	74,204	649,646	255,198	6,604	4,092	2,986,114
Additions		-	1,470	5,743	14,227	59,529	18,076	182	379	99,606
Adjustments		-	-	-	-	45	12	-	-	57
Disposals		-	(625)	-	(6)	(13,269)	(13,582)	(82)	(137)	(27,701)
Reclassifications		-	(292)	(4,271)	1,783	710	2,070	-	-	-
At 31 March 2011		200,858	1,786,279	11,258	90,208	696,661	261,774	6,704	4,334	3,058,076

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

3 Property, Plant and Equipment (cont'd)

University Company		Freehold land \$'000	Buildings and infrastructure \$'000	Buildings under construction \$'000	Renovation \$'000	Machinery, laboratory and workshop equipment \$'000	Furniture and office equipment \$'000	Transportation equipment \$'000	Others \$'000	Total \$'000
Accumulated depreciation										
At 1 April 2009		-	961,591	-	21,276	414,311	205,685	1,616	2,328	1,606,807
Depreciation for the year		-	77,602	-	7,822	57,898	20,280	767	194	164,563
Disposals		-	(3,039)	-	(249)	(17,233)	(26,160)	(189)	(60)	(46,930)
Reclassifications		-	(40)	-	(60)	37	63	-	-	-
At 31 March 2010		-	1,036,114	-	28,789	455,013	199,868	2,194	2,462	1,724,440
Depreciation for the year		-	74,444	-	13,709	61,724	21,150	771	189	171,987
Disposals		-	(583)	-	(1)	(13,065)	(13,318)	(82)	(120)	(27,169)
Reclassifications		-	(131)	-	(24)	(114)	269	-	-	-
At 31 March 2011		-	1,109,844	-	42,473	503,558	207,969	2,883	2,531	1,869,258

Carrying amount

At 1 April 2009	200,858	782,651	55,188	9,587	176,013	42,051	4,738	1,705	1,272,791
At 31 March 2010	200,858	749,612	9,786	45,415	194,633	55,330	4,410	1,630	1,261,674
At 31 March 2011	200,858	676,435	11,258	47,735	193,103	53,805	3,821	1,803	1,188,818

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

3 Property, Plant and Equipment (cont'd)

The freehold land of the Group and the University Company were stated at valuation carried out in December 1987 based on values in a valuation report from the Commissioner of Lands. The revaluation was done on a one-off basis and accordingly, the transitional provision in FRS 16 - Property, Plant and Equipment was adopted to continue with its existing policy of stating the freehold land at deemed cost.

4 Prepaid Lease

	Group and University Company	
	2011 \$'000	2010 \$'000
Cost		
At 31 March	4,982	4,982
Accumulated amortisation		
At 1 April	1,217	1,051
Amortisation charge for the year	166	166
At 31 March	1,383	1,217
Carrying amount		
At 1 April	3,765	3,931
At 31 March	3,599	3,765

5 Subsidiaries

	University Company	
	2011 \$'000	2010 \$'000
Equity investments at cost	500	500
Loans to subsidiaries	291	291
	791	791

The loans to subsidiaries are unsecured and interest-free. The settlement of the amounts are neither planned nor likely to occur in the foreseeable future. As the amounts are, in substance, a part of the University Company's net investment in the subsidiaries, they are stated at cost less impairment losses.

Details of subsidiaries are as follows:

Name of subsidiary	Country of incorporation	Ownership interest	
		2011 %	2010 %
<u>Held by the University Company</u>			
@ NTU Ventures Private Limited	Singapore	100	100
@ Singapore Centre for Chinese Language Limited	Singapore	100	100
* NIE International Private Limited	Singapore	100	100
# Friends of NTU	United States	100	100

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

5 Subsidiaries (cont'd)

Name of subsidiary	Country of incorporation	Ownership interest	
		2011 %	2010 %
<u>Held by NTU Ventures Private Limited</u>			
@ Confucius Institute, NTU Pte Ltd	Singapore	100	100
@ TechBiz Xccelerator Pte Ltd	Singapore	100	100
@ Institute of Environmental Science and Engineering (IESE) Pte Ltd	Singapore	100	100
@ Systemed Pte Ltd (formerly Nanofrontier Pte Ltd)	Singapore	100	100
@ NTUV International Pte Ltd	Singapore	100	100
@ Interactive Digital Media Ltd	Singapore	100	-
<u>Held by NTUV International Pte Ltd</u>			
^ Nanyang Venture Consulting (Shanghai) Co., Ltd	China	100	100
<u>Held by IESE Pte Ltd</u>			
## IESE Water (Asia) Pte Ltd	Singapore	-	100
@ Audited by KPMG LLP (with effect from the financial year ended 31 March 2011)			
* Audited by TeoFoongWong LC Loong, Singapore			
^ Audited by Jingdu Tinwha CPAs Shanghai Branch			
# No audit is required			
### De-registered with effect from 13 April 2010			

6 Student Loans

	Group and University Company	
	2011 \$'000	2010 \$'000
Student loans	8,481	10,169
Represented by:		
Amount repayable within 12 months	3,941	3,895
Amount repayable after 12 months	4,540	6,274
	8,481	10,169

Included in student loans are personal computer loans of \$3,275,000 (2010: \$5,080,000), which are interest-free and are repayable by monthly instalments within a period of 3 years after the borrowers' graduation. The fair value at inception was determined based on expected future principal repayment cash flows, discounted at the average interest rate of 6.5% (2010: 6.5%) per annum. These loans are subsequently measured at amortised cost, using the effective interest method.

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

7 Finance Lease Receivables

	Group and University Company	
	2011 \$'000	2010 \$'000
Gross receivables due:		
- Not later than one year	1,058	1,058
- Between two to five years	5,009	4,627
- Later than five years	24,539	25,979
	30,606	31,664
Less: Unearned interest	7,121	7,700
Net investment in finance lease	23,485	23,964

The net investment in finance lease receivables are analysed as follows:

	Group and University Company	
	2011 \$'000	2010 \$'000
Current	491	479
Non-current	22,994	23,485
	23,485	23,964

This relates to the lease of land and building to NTU Alumni Club over a lease period of 26 years.

8 Derivative Financial Instruments

The table below sets out the notional principal amounts and the positive and negative fair values of the Group and University Company's outstanding derivative financial instruments at the balance sheet date. Positive and negative fair values represent the mark-to-market values of the derivative contracts and are termed as derivative assets and derivative liabilities respectively. Notional principal amounts are the amount of principal underlying the contract at the reporting date.

	Contractual maturity		Carrying amount	
	Within 1 year \$'000	Total \$'000	Derivative asset \$'000	Derivative liabilities \$'000
Group and University Company				
2011				
Foreign currency forwards	388,734	388,734	5,307	-
2010				
Foreign currency forwards	243,062	243,062	417	449

The fair value of forward exchange contracts is estimated by discounting the difference between the contractual forward price and the current forward price for the residual period to maturity of the contract.

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

9 Loan to a Subsidiary

The loan to a subsidiary is unsecured, interest-free and repayable on demand.

10 Trade and Other Receivables

	Note	Group		University Company	
		2011 \$'000	2010 \$'000	2011 \$'000	2010 \$'000
Trade receivables		16,476	21,047	14,167	18,644
Allowance for doubtful receivables		(628)	(728)	(628)	(674)
		15,848	20,319	13,539	17,970
Interest receivables		3,017	1,407	3,017	1,407
Operating grant receivables		72,267	-	72,267	-
Research grant receivables		36,602	32,644	36,602	32,644
Endowment matching grant receivables		28,147	23,833	28,147	23,833
Grants receivables	15	19,272	1,460	19,272	1,460
Other receivables		75,022	46,988	73,887	45,271
Amounts due from subsidiaries (trade)		-	-	168	168
Allowance for doubtful receivables		-	-	(147)	(147)
		-	-	21	21
Amounts due from subsidiaries (non-trade)		-	-	1,015	1,015
Allowance for doubtful receivables		-	-	(1,015)	(1,015)
		-	-	-	-
Loans and receivables		250,175	126,651	246,752	122,606
Prepayments		3,276	2,558	3,133	2,461
		253,451	129,209	249,885	125,067

The amounts due from subsidiaries are unsecured, interest-free and repayable on demand.

Concentration of credit risk relating to trade receivables is limited due to the Group's varied customers. These customers are mainly statutory boards, ministries and companies who provided funding for research activities. The Group's historical experience in the collection of accounts receivables falls within the recorded allowances. Due to these factors, management believes that no additional credit risk beyond amounts provided for collection losses is inherent in the Group's trade receivables.

Credit risk for other receivables including the various grant receivables is limited as these relate mainly to receivables from the Ministry.

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

11 Financial Assets at Fair Value through Income and Expenditure

	Group and University Company	
	2011 \$'000	2010 \$'000
Fixed income investments	144,607	140,596
Quoted equity investments	306,992	143,287
Unquoted equity investments	443,963	379,611
Other investments	64,295	15,041
	959,857	678,535

The Group and University Company's investments are managed by professional fund managers. The fair values of the financial instruments traded in active markets (such as exchange-traded and over-the-counter securities and derivatives) are based on quoted market prices at the balance sheet date. The investments in unquoted equities represent investments in private equity funds, hedge funds, limited partnerships and pooled vehicles. The fair values of these unquoted equity investments are based on net asset values provided by fund managers using their valuation methodologies.

The Group and University Company's investments comprise financial instruments (fixed income, quoted equity, unquoted equity and other investments) managed by professional fund managers and cash balances and bank deposits as follows:

		Group and University Company	
	Note	2011 \$'000	2010 \$'000
Financial assets at fair value through income and expenditure		959,857	678,535
Cash balances and bank deposits	12	102,265	282,936
		1,062,122	961,471

The cash balances and bank deposits are included as a component in the cash and cash equivalents in note 12 for the purpose of disclosure.

The weighted average interest rates of fixed income securities at the balance sheet date and the periods in which they mature are as follows:

	Effective interest rate % p.a.	Fixed interest rate maturing			Total \$'000
		Within 1 year \$'000	In 1 to 5 years \$'000	After 5 years \$'000	
		Group and University Company			
2011	0.3 – 4.4	-	70,688	74,242	144,930
2010	0.5 – 3.9	-	72,171	67,520	139,691

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

12 Cash and Cash Equivalents

		Group		University Company	
	Note	2011 \$'000	2010 \$'000	2011 \$'000	2010 \$'000
Investments					
Cash at bank and in hand		2,180	2,604	2,180	2,604
Deposit with financial institutions		38,800	221,500	38,800	221,500
		40,980	224,104	40,980	224,104
Add: Cash held by fund managers		61,285	58,832	61,285	58,832
	11	102,265	282,936	102,265	282,936
Others					
Cash at bank and in hand		31,206	37,546	17,379	25,231
Deposit with financial institutions		852,663	754,853	851,038	753,633
		883,869	792,399	868,417	778,864
Cash and cash equivalents		986,134	1,075,335	970,682	1,061,800

The University Company manages 2 bank accounts on behalf of the NTU Students' Union. As at balance sheet date, the bank balance of \$4,797,000 (2010: \$4,519,000) has not been included in the cash and cash equivalents of the University Company.

13 Trade and Other Payables

		Group		University Company	
	Note	2011 \$'000	2010 \$'000	2011 \$'000	2010 \$'000
Provision for unutilised compensated leave		37,271	35,708	37,148	35,639
Other payables and accruals	13(a)	142,470	94,235	137,612	90,392
		179,741	129,943	174,760	126,031

- (a) This amount includes the provision for undergraduate funding of \$25,401,000 (2010: \$4,101,000). Provision for undergraduate funding relates to the adjustment to the undergraduate output funding from the Ministry of Education ("MOE") in the event the University achieves fewer undergraduates than MOE's output target. The provision is based on the University's actual and projected number of undergraduates.

The movement in the provision of undergraduate funding is as follows:

	Group		University Company	
	2011 \$'000	2010 \$'000	2011 \$'000	2010 \$'000
At 1 April	4,101	8,202	4,101	8,202
Provision made during the year	21,300	-	21,300	-
Provision reversed during the year	-	(4,101)	-	(4,101)
At 31 March	25,401	4,101	25,401	4,101

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

14 Operating Grant Received in Advance

	Group	
	2011 \$'000	2010 \$'000
At 1 April	541	-
Grants received during the year	4,003	4,222
	4,544	4,222
Less:		
Amounts taken to statement of comprehensive income	3,276	2,666
Amounts transferred to deferred capital grants	404	1,015
At 31 March	864	541

This relates to grants received from the Ministry to finance the subsidiary's operations. The balance in this account represents grant received but not utilised at the end of the financial year.

15 Grants Receivable/IT and F&E Grants/Sinking Fund Received in Advance

		Group		University Company	
	Note	2011 \$'000	2010 \$'000	2011 \$'000	2010 \$'000
Grants receivable within 12 months					
- Development grant		8,194	1,460	8,194	1,460
- IT and F&E grant		5,386	-	5,386	-
- Sinking fund		5,692	-	5,692	-
	10	19,272	1,460	19,272	1,460
IT and F&E grant received in advance	15(a)	(24,899)	(22,013)	(24,899)	(21,360)
Sinking fund received in advance	15(b)	(170,230)	(134,931)	(170,230)	(134,931)
		(175,857)	(155,484)	(175,857)	(154,831)

Movements in grants (received in advance)/receivable:

At 1 April		(155,484)	(110,038)	(154,831)	(110,027)
Grants received during the year		(122,856)	(183,264)	(122,856)	(182,622)
		(278,340)	(293,302)	(277,687)	(292,649)
Less:					
Amounts transferred to deferred capital grants	18	76,129	93,251	75,743	93,251
Amounts taken to statement of comprehensive income		26,354	44,567	26,087	44,567
At 31 March		(175,857)	(155,484)	(175,857)	(154,831)

These are grants from the Ministry for financing development projects.

- (a) This amount relates to grants received in advance for the purchase of IT and F&E items to support teaching and administrative functions.
- (b) This amount relates to a sinking fund received in advance from the Ministry for the purpose of maintenance and replacement of property, plant and equipment.

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

16 Short-term Borrowings

The borrowings are unsecured, bear interest at 0.86% (2010: 1.40%) per annum and are repayable within the next twelve months from the financial year end.

17 Research Grants Received in Advance

		Group		University Company	
	Note	2011 \$'000	2010 \$'000	2011 \$'000	2010 \$'000
At 1 April		60,350	49,395	60,102	49,395
Grants received during the year		213,156	164,592	212,222	164,344
		273,506	213,987	272,324	213,739
Less:					
Amounts transferred to deferred capital grants (note 18)		20,313	19,014	20,313	19,014
Amounts taken to statement of comprehensive income		189,740	161,364	189,385	161,364
Amounts refunded to the Ministry, other ministries and statutory boards		-	5	-	5
Amounts transferred to grant receivables		(3,958)	(26,746)	(3,958)	(26,746)
At 31 March		67,411	60,350	66,584	60,102

These are grants received from the ministries, statutory boards, A*Star and other sources for research activities. The balance in this account represents grants received but not utilised at the end of the financial year. These grants are repayable on demand.

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

18 Deferred Capital Grants

Group	Ministries		Statutory boards		Others		Total	
	2011 \$'000	2010 \$'000	2011 \$'000	2010 \$'000	2011 \$'000	2010 \$'000	2011 \$'000	2010 \$'000
At 1 April	823,725	827,503	46,612	49,039	6,227	5,543	876,564	882,085
Add:								
Grants received for capital expenditure and development project transferred from								
- Operating grants (note 25)	21,739	27,698	-	-	-	-	21,739	27,698
- Research grants (note 17)	13,989	15,345	6,053	3,377	271	292	20,313	19,014
- Development grants (note 15)	76,129	93,251	-	-	-	-	76,129	93,251
- Accumulated surplus	-	7	15	27	-	-	15	34
- Other grants	1,146	9,214	8,805	5,368	885	1,093	10,836	15,675
Assets donated by various organisations	-	-	-	-	572	25	572	25
Adjustments/Reclassifications	57	427	-	21	-	-	57	448
	113,060	145,942	14,873	8,793	1,728	1,410	129,661	156,145
Less:								
Grants taken to statement of comprehensive income								
Amortisation charge for the year	154,341	149,218	11,191	10,694	847	725	166,379	160,637
On disposal of fixed assets	439	510	58	518	2	1	499	1,029
	154,780	149,728	11,249	11,212	849	726	166,878	161,666
Adjustments/Reclassifications	(3)	(8)	18	8	(15)	-	-	-
At 31 March	782,008	823,725	50,218	46,612	7,121	6,227	839,347	876,564

Deferred capital grants amortised (non-ministry) refers to amortisation of grants received from statutory boards and other organisations.

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

18 Deferred Capital Grants (cont'd)

University Company	Ministries		Statutory boards		Others		Total	
	2011 \$'000	2010 \$'000	2011 \$'000	2010 \$'000	2011 \$'000	2010 \$'000	2011 \$'000	2010 \$'000
At 1 April	822,792	827,482	46,612	49,039	6,227	5,543	875,631	882,064
Add:								
Grants received for capital expenditure and development project transferred from								
- Operating grants	21,335	26,683	-	-	-	-	21,335	26,683
- Research grants (note 17)	13,989	15,345	6,053	3,377	271	292	20,313	19,014
- Development grants (note 15)	75,743	93,251	-	-	-	-	75,743	93,251
- Accumulated surplus	-	7	15	27	-	-	15	34
- Other grants	1,016	9,214	8,805	5,368	885	1,093	10,706	15,675
Assets donated by various organisations	-	-	-	-	572	25	572	25
Adjustments/Reclassifications	57	427	-	21	-	-	57	448
	112,140	144,927	14,873	8,793	1,728	1,410	128,741	155,130
Less:								
Grants taken to statement of comprehensive income								
Amortisation charge for the year	154,016	149,115	11,191	10,694	847	725	166,054	160,534
On disposal of fixed assets	439	510	58	518	2	1	499	1,029
	154,455	149,625	11,249	11,212	849	726	166,553	161,563
Adjustments/Reclassifications	(3)	(8)	18	8	(15)	-	-	-
At 31 March	780,480	822,792	50,218	46,612	7,121	6,227	837,819	875,631

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

19 Capital Account

The capital account represents the revaluation of the freehold land alienated to Nanyang Technological University (details are set out in note 3).

20 Endowment Fund

The fund comprises donations, grants, gifts, testamentary disposition and proceeds from gifts of movable or immovable properties. The objectives of this fund include the provision of facilities for teaching, training and research, the advancement and dissemination of knowledge and the promotion of research.

The Government has undertaken to match all donations to the Nanyang Technological University Endowment Fund. Such government grants are accounted for on an accrual basis.

21 Funds Managed on Behalf of the Ministry

Pursuant to the Tuition Fee Loan (TFL), Study Loan (SL) and Overseas Student Program Loan - 50% funded by MOE (OSP) schemes, the University Company acts as agent for these loans schemes and the Ministry as the financier providing the advances.

	Group and University Company	
	2011 \$'000	2010 \$'000
Advances from the Ministry:		
At 1 April	228,440	191,582
Advances received	25,488	36,690
Interest income	4,231	206
Advances repaid	(28,700)	-
Bad debts (incurred)/recovered	(103)	168
Interest expense	(4,231)	(206)
	225,125	228,440
Represented by:		
Cash and bank balances held on / (paid on) behalf	4,181	(5,850)
TFL, SL and OSP	220,944	234,290
Net assets	225,125	228,440

Cash and bank balances of \$4,181,000 are held on behalf of the Ministry in 2011 while \$5,850,000 was paid on behalf of the Ministry in 2010 for the purpose of extending study loans to students.

Students on TFL, SL and OSP are to commence repayment upon graduation. Students are given an option to repay by monthly instalments of minimum amount of \$100 over a period of up to 20 years (for TFL and SL) and 5 years (for OSP) after the borrowers' graduation. Interest is charged at the average prime rates of three local banks prevailing on the first day of each quarter, or such other rates as may be determined from time to time. Interest charged in 2011 is 4.75% (2010: 4.75%) per annum.

The interest on the TFL, SL and OSP is remitted in full to the Ministry on a half-yearly basis.

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

22 Interest Income

	2011 \$'000	Group 2010 \$'000
Interest received/receivable		
- fixed deposits (placed with financial institutions)	2,989	3,131
- bank balances	26	4
- finance leases	579	591
	3,594	3,726

23 Profit on Investments

	2011 \$'000	Group 2010 \$'000
Interest income	3,560	3,205
Dividend income	2,428	1,352
Fair value gain on financial assets through income and expenditure	32,031	42,401
Fair value gain on derivative financial instruments	33,863	19,006
	71,882	65,964

24 Deficit Before Grants from Ministries

The following items have been included in arriving at deficit before grants from ministries:

	2011 \$'000	Group 2010 \$'000
Allowance for doubtful receivables	(100)	(159)
Exchange loss	522	64
Operating lease expense	1,498	2,103
Contribution to defined contribution plans included in expenditure on manpower	36,368	34,540
Government grants – Job Credit Scheme, offset against staff costs	(1,005)	(9,995)

25 Operating Grants from Ministry

Note	2011 \$'000	Group 2010 \$'000
Operating grants received and receivable during the year	601,267	555,919
Payment for goods and services tax on tuition fees and tuition grants	(46,237)	(43,525)
Amounts transferred to		
- deferred capital grants	18 (21,739)	(27,698)
- grant received in advance	14 (323)	(541)
Provision for attrition	(21,300)	4,101
Operating grants taken to statement of comprehensive income	511,668	488,256

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

26 Taxation

The University Company is registered as a charitable institution by virtue of Section 13M(2)(b) of the Income Tax Act, Chapter 134.

The subsidiaries of the Group have unutilised capital allowances and unabsorbed tax losses of approximately \$27,000 (2010: \$27,000) and \$1,501,830 (2010: \$1,548,000) respectively which are available for offset against future taxable income. Deferred tax assets have not been recognised in respect of these items because it is not probable that future taxable profit will be available against which the subsidiaries can utilise the benefit.

The unabsorbed tax losses and unutilised capital allowances of the subsidiaries are subject to agreement by the tax authorities and compliance with the tax regulations in the respective countries in which certain subsidiaries operate. These temporary differences do not expire under current tax legislation.

	Group	
	2011 \$'000	2010 \$'000
Current tax expense		
Current year	291	977
Reconciliation of effective tax		
Surplus before income tax	218,770	208,120
Income tax using Singapore tax rates of 17%	37,191	35,380
Income not subject to tax	(36,900)	(34,403)
	291	977

27 Commitments

Operating lease commitments

The future lease payments contracted at the reporting date but not recognised as liabilities are analysed as follows:

	2011 \$'000	2010 \$'000
Not later than one year	1,906	1,410
Later than one year but not later than five years	3,371	1,576

The Group and the University Company leases personal computers and servers under operating leases. The leases typically run for a period of 3 years.

Since the Group does not participate in the residual value of the computers and servers, it was determined that substantially all the risks and rewards of the computers are with the suppliers. As such, the Group determined that the leases are operating leases.

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

27 Commitments (cont'd)

Capital commitments

	2011 \$'000	2010 \$'000
Contracted but not provided for	466,656	474,208
Authorised but not contracted for	735,285	811,741

The capital commitments are funded from grants from ministries, subject to satisfying certain terms and conditions.

	2011 \$'000	2010 \$'000
Purchase of unquoted equity investments		
- contracted but not provided for	25,937	36,844

Joint Program in Hospitality Management with Cornell University

Under the agreement with Cornell University, Nanyang Technological University (NTU) will establish a joint program in hospitality management with Cornell University through the Cornell-Nanyang Institute of Hospitality Management (CNI). The CNI programs include degree and non-degree programs, short courses, research and other related academic activities. NTU has provided a Standby Letter of Credit of USD0.8 million renewable up to 30 June 2012 to cover tuition fees and reimbursable expenses due to Cornell University.

Agreements entered into with Massachusetts Institute of Technology (MIT) and the National University of Singapore (NUS)

The University Company has entered into a Singapore-MIT Alliance (SMA) agreement with MIT and NUS to establish collaborative efforts in research and education in engineering, science and technology, including interface with business and industry. The agreement was effective from 17 September 2004 and as at 31 March 2011, NTU's outstanding commitment under SMA-2 is estimated at USD6.9 million (2010: USD8.8 million) till the expiry of the agreement.

Collaboration with Stanford University

The University Company and Stanford University have entered into a collaborative Singapore Stanford Partnership (SSP) program for the development of postgraduate education and research in environmental science and engineering. The SSP program will offer Master of Science and Doctor of Philosophy degrees in environmental science and engineering whereby students will be integrated into the Stanford experience. As at 31 March 2011, NTU's outstanding commitments under the program are estimated at USD0.1 million (2010: USD0.2 million).

Collaboration with Imperial College of Science, Technology and Medicine

On 27 August 2010, the University Company and Imperial College of Science, Technology and Medicine entered into an agreement in relation to a collaboration for the establishment and operation of a medical school in Singapore. As at 31 March 2011, NTU's outstanding commitment under the collaboration is estimated at £51.6 million till the expiry of the agreement.

28 Significant Related Party Information

Related party transactions

For the purposes of these financial statements, parties are considered to be related to the Group if the Group has the ability, directly or indirectly, to control the party or exercise significant influence over the party in making financial and operating decisions, or vice versa, or where the Group and the party are subject to common control or common significant influence. Related parties may be individuals or other entities.

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

28 Significant Related Party Information (cont'd)

Related party transactions (cont'd)

Other than disclosed elsewhere in the financial statements, the Group had the following significant transactions with related parties during the year on terms agreed between the parties as follows:

	2011 \$'000	2010 \$'000
Related parties		
Purchase of goods and services	14,502	18,668
Sale of services	19,581	21,421
Key management personnel compensation		
Short-term employee benefits	4,098	3,475

29 Financial Instruments

Credit risk

The carrying amount of financial assets represents the maximum credit exposure. At the balance sheet date, there is no significant concentration of credit risk other than grant receivables.

The aging of loans and receivables at the reporting date is:

	2011		2010	
	Gross \$'000	Allowance for doubtful receivables \$'000	Gross \$'000	Allowance for doubtful receivables \$'000
Group				
Not past due	245,732	-	119,833	-
Past due 1 – 30 days	2,144	-	617	-
Past due 31 – 150 days	1,090	-	3,581	22
More than 151 days	1,837	628	3,348	706
	250,803	628	127,379	728
University Company				
Not past due	243,024	-	116,749	-
Past due 1 – 30 days	1,724	-	541	-
Past due 31 – 150 days	996	-	2,730	-
More than 151 days	2,798	1,790	4,422	1,836
	248,542	1,790	124,442	1,836

The movement in the allowance for doubtful receivables in respect of loans and receivables during the year is as follows:

	Group		University Company	
	2011 \$'000	2010 \$'000	2011 \$'000	2010 \$'000
At 1 April	728	887	1,836	2,017
Allowance reversed	(100)	(159)	(46)	(181)
At 31 March	628	728	1,790	1,836

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

29 Financial Instruments (cont'd)

Credit risk (cont'd)

Based on historical default rates, the Group believes that no allowance for doubtful receivables is necessary in respect of loans and receivables not past due. These loans and receivables are due from customers that have a good record with the Group.

Liquidity risk

The contracted undiscounted cash outflows on financial liabilities approximate their carrying amounts and generally settle within one year.

Interest risk

Surplus funds from the Group's operations are invested in bank deposits and with fund managers. The Group has no material exposure to interest rate risk from fixed deposits and borrowings as the interest rates are on a fixed rate basis. The Group's investments in fixed income securities that are managed by fund managers (classified as financial assets at fair value through income and expenditure) are exposed to interest rate risk.

Sensitivity analysis for interest risk

If movements in interest rates result in a 3% (2010: 3%) appreciation/depreciation in the value of the fixed income investments, all other variables being held constant, the Group's surplus would have been higher/lower by \$4,338,000 (2010: \$4,218,000).

Price risk

The Group is exposed to equity securities price risk from investments classified as financial assets at fair value through income and expenditure and available-for-sale financial assets. The market values of these investments are affected by, amongst others, changes in market prices as a result of changes in the global economic conditions, macro and micro economic factors affecting the country where the investments are quoted, and factors specific to the investee corporations.

To manage the price risk arising from investment in equity securities, the Group diversifies its portfolio across different markets and industries whenever it is appropriate.

Sensitivity analysis for price risk

If movements in financial markets result in a 5% (2010: 5%) appreciation/depreciation in the value of the quoted equity and other investments, all other variables being held constant, the Group's surplus would have been higher/lower by \$18,564,000 (2010: \$7,916,000).

If movements in financial markets result in a 5% (2010: 5%) appreciation/depreciation in the value of the unquoted equity investments, all other variables being held constant, the Group's surplus would have been higher/lower by \$22,198,000 (2010: \$18,981,000).

Foreign currency risk

The Group's investments which are managed by fund managers may be in instruments denominated in foreign currencies. Currency exposure arising from such investments is managed by fund managers. Additional information is set out in note 8.

The main foreign currency exposure of investments (net of foreign currency forwards) based on information provided to management is as follows:

	US Dollar \$'000	Euro \$'000	Japanese Yen \$'000	Pound Sterling \$'000	Others \$'000
2011	127,149	39,792	27,567	19,621	180,038
2010	115,547	28,333	13,957	16,046	125,411

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

29 Financial Instruments (cont'd)

Foreign currency risk (cont'd)

Sensitivity analysis for currency risk

If the relevant foreign currency changes against the Singapore dollar by 5% (2010: 5%), all other variables being held constant, the effects will be as follows:

Increase/(Decrease)	Income and expenditure	
	2011 \$'000	2010 \$'000
<i>US Dollar against Singapore Dollar</i>		
Strengthened	6,357	5,777
Weakened	(6,357)	(5,777)
<i>Euro against Singapore Dollar</i>		
Strengthened	1,990	1,417
Weakened	(1,990)	(1,417)
<i>Japanese Yen against Singapore Dollar</i>		
Strengthened	1,378	698
Weakened	(1,378)	(698)
<i>Pound Sterling against Singapore Dollar</i>		
Strengthened	981	802
Weakened	(981)	(802)

Estimating the fair values

Financial assets at fair value through income and expenditure

The fair values of financial instruments traded in active markets (such as exchange-traded and over-the-counter securities and derivatives) are based on quoted market prices at the balance sheet date. The fair values of unquoted equity investments are based on net asset values provided by fund managers using their valuation methodologies.

Non-derivative financial liabilities

Fair value, which is determined for disclosure purposes, is calculated based on the present value of future principal and interest cash flows, discounted at the market rate of interest at reporting date.

Other financial assets and liabilities

The carrying amounts of financial assets and liabilities with a maturity of less than one year (including loan to a subsidiary, trade and other receivables, cash and cash equivalents, trade and other payables, and short-term borrowings) are assumed to approximate their fair values. All other financial assets and liabilities are discounted to determine their fair values.

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

29 Financial Instruments (cont'd)

Interest rates used in determining fair values

The Group uses the government yield curve as of 31 March 2011 plus an adequate constant credit spread to discount financial instruments. The interest rates used are as follows:

	2011 % p.a.	2010 % p.a.
Finance lease receivables	2.44	2.44
Receivables	6.50	6.50

Fair value hierarchy

The table below analyses financial instruments carried at fair value, by valuation method. The different levels have been defined as follows:

- Level 1:** quoted prices (unadjusted) in active markets for identical assets or liabilities
- Level 2:** inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly (i.e., as prices) or indirectly (i.e., derived from prices)
- Level 3:** inputs for the asset or liability that are not based on observable market data (unobservable inputs)

	Level 1 \$'000	Level 2 \$'000	Level 3 \$'000	Total \$'000
Group				
31 March 2011				
Available-for-sale financial assets	429	-	-	429
Financial assets at fair value through income and expenditure	515,894	161,503	282,460	959,857
Derivative financial assets	-	5,307	-	5,307
	516,323	166,810	282,460	965,593
31 March 2010				
Available-for-sale financial assets	1,455	-	32	1,487
Financial assets at fair value through income and expenditure	298,924	119,921	259,690	678,535
Derivative financial assets	-	417	-	417
	300,379	120,338	259,722	680,439
Derivative financial liabilities	-	449	-	449

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

29 Financial Instruments (cont'd)

Fair value hierarchy (cont'd)

	Level 1 \$'000	Level 2 \$'000	Level 3 \$'000	Total \$'000
University Company				
31 March 2011				
Available-for-sale financial assets	-	-	-	-
Financial assets at fair value through income and expenditure	515,894	161,503	282,460	959,857
Derivative financial assets	-	5,307	-	5,307
	515,894	166,810	282,460	965,164

Derivative financial liabilities	-	-	-	-
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31 March 2010

Available-for-sale financial assets	-	-	-	-
Financial assets at fair value through income and expenditure	298,924	119,921	259,690	678,535
Derivative financial assets	-	417	-	417
	298,924	120,338	259,690	678,952

Derivative financial liabilities	-	449	-	449
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Assets measured at fair value based on Level 3:

	Financial assets designated at fair value through income and expenditure	Available-for-sale financial assets	Total
	Unquoted equity investments \$'000	Unquoted equity investments \$'000	\$'000

Group

At opening balance	259,690	32	259,722
Total gains or losses in statement of comprehensive income	14,860	(32)	14,828
Subscriptions/Contributions	18,696	-	18,696
Redemptions/Distributions	(10,786)	-	(10,786)
At closing balance	282,460	-	282,460

Total gains or losses for the period included in statement of comprehensive income for assets held at the end of the reporting period	14,860	-	14,860
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NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

29 Financial Instruments (cont'd)

Assets measured at fair value based on Level 3: (cont'd)

	Financial assets designated at fair value through income and expenditure	Available-for-sale financial assets	Total
	Unquoted equity investments \$'000	Unquoted equity investments \$'000	\$'000

Group

Gains or losses included in statement of comprehensive income for the period (above) are presented as follows:	
Total gains or losses included in statement of comprehensive income for the period	14,828

Total gains or losses for the period included in statement of comprehensive income for assets held at the end of the reporting period	14,860
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University Company

At opening balance	259,690	-	259,690
Total gains or losses in statement of comprehensive income	14,860	-	14,860
Subscriptions/Contributions	18,696	-	18,696
Redemptions/Distributions	(10,786)	-	(10,786)
At closing balance	282,460	-	282,460

Total gains or losses for the period included in statement of comprehensive income for assets held at the end of the reporting period	14,860	-	14,860
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Gains or losses included in statement of comprehensive income for the period (above) are presented as follows:	
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Total gains or losses included in statement of comprehensive income for the period	14,860
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Total gains or losses for the period included in statement of comprehensive income for assets held at the end of the reporting period	14,860
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NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

30 Financial Risk Management

Overview

The Group has exposure to the following risks from its use of financial instruments:

- credit risk
- liquidity risk
- market risk

This note presents information about the Group's exposure to each of the above risks, the Group's objectives, policies and processes for measuring and managing risk, and the Group's management of capital. Further quantitative disclosures are included throughout these financial statements.

Risk management

Risk management is integral to the activities of the Group. The Group has controls in place to create an acceptable balance between the cost of risks occurring and the cost of managing the risks. Management continually monitors its risk management processes to ensure that an appropriate balance between risk and control is achieved. Risk management processes are reviewed regularly to reflect changes in the Group's activities.

Credit risk

Trade and other receivables

Credit risk is the potential loss resulting from the failure of a customer or a counterparty to settle its financial and contractual obligations to the Group, as and when they fall due.

The Group manages its credit risk with regular monitoring and following up actions for the debts outstanding from debtors. Additional information is set out in Notes 10 and 29.

Investments

Cash and deposits are placed with reputable financial institutions. Investment portfolios are managed by professional fund managers.

The maximum exposure to credit risk in the event that the counterparties fail to perform their obligations in relation to each class of recognised financial asset is the carrying amount of those assets as stated in the balance sheet.

The credit risk is diversified over a range of institutions.

Liquidity risk

Liquidity risk is the risk that the Group will encounter difficulty in meeting the obligations associated with its financial liabilities that are settled by delivering cash or another financial asset. The Group's approach to managing liquidity is to ensure, as far as possible, that it will always have sufficient liquidity to meet its liabilities when due, under both normal and stressed conditions, without incurring unacceptable losses or risking damage to the Group's reputation.

The Group monitors its liquidity risk and maintains a level of cash and cash equivalents deemed adequate to finance the Group's operations and to mitigate the effects of fluctuations in cash flow. Typically the Group ensures that it has sufficient cash on demand to meet expected operational expenses including the servicing of financial obligations; this excludes the potential impact of extreme circumstances that cannot be reasonably predicted.

In addition, the Group maintains the following lines of credit:

- \$10 million bankers' guarantee facility that is unsecured.
- \$220 million that can be drawn down to meet short-term financing needs.

NOTES TO THE FINANCIAL STATEMENTS

Year ended 31 March 2011

30 Financial Risk Management (cont'd)

Market risk – Price risk

The Group is exposed to price risk arising from investments invested through funds managed by external managers in the various asset classes. The Group manages its price risk through portfolio diversification across asset classes to manage exposure risk.

31 Charity Act and Regulations

As required for disclosure under Section 17(1) of the Charities (Institutions of a Public Character) Regulations 2008, the University Company has received total tax deductible donations of \$50,065,000 (2010: \$28,599,000) in the current financial year.



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