An all-rounder?
NTU wants you

You aced the ‘A’ Levels, and in junior college even led school committees, ran a business on the side, and volunteered your services for the greater good of the community. You are NTU’s dream student – as smart as you are enterprising and socially conscious, with a never-say-die attitude.

Recognising that talent is multidimensional, NTU announced on 10 March a major revamp of its admissions criteria to attract the best and brightest all-rounders into its undergraduate programme.

It began the selection process this March by looking for desired qualities such as leadership, creativity, and passion. The first 10% of its intake of 4,000 will be chosen based on their demonstration of these qualities on a one-page write-up backed by testimonials and recommendations.

Those who score high on the three qualities will be given a place as long as they meet the academic criteria set for their chosen course. The rest will be ranked on a two-tier system comprising ‘A’ Level or polytechnic results and involvement in co-curricular activities.

By considering special talents and abilities before grades in the shortlisting process, NTU has turned a traditional approach on its head.

Faculty-specific criteria
The latest admissions exercise started in March and closed on 1 April. Next year’s exercise may see faculty-specific criteria being added.

Student leaders have also been asked to help review the applicants. To ensure objectivity, the admissions committee will send the final selection results for auditing at the university-level.

NTU’s admissions revamp followed an announcement on 28 February, when the Government formally accepted the recommendations proposed by the University Admission Committee for a flexible and differentiated university admissions system.

Universities can now conduct separate admissions exercises and admit up to 10% of their undergraduate intakes based on their own criteria.

In addition, the Scholastic Assessment Test (SAT 1) has been dropped from the admission criteria, although for 2004 and 2005, admission scores will be automatically calculated with and without SAT 1 and the better of the two scores considered for admission.

While a pass in the Mother Tongue Language is still required for university admission, its grade need no longer be counted in the admission score.
Thanks to the generosity of one remarkable man, Mr Ng Bok Eng, more NTU students will be able to experience a global education. This is because needy students now have the financial help to pursue academic programmes overseas.

Mr Ng's generous gift of $5 million, establishing the Ng Bok Eng Endowment Fund, was commemorated at the Istana on 11 February. The biggest benefaction from an individual donor, it comes at a time when NTU is looking to send more students abroad through its new Global Immersion Programme.

Of the $5 million, $3.5 million will be used to establish the Ng Bok Eng Scholarship, while $1.5 million will fund the Ng Bok Eng Professorship – the eighteenth professorship at NTU. The donation, when matched dollar for dollar by the Government, will amount to $10 million for the NTU Endowment Fund. Both the Scholarship and Professorship will be endowed in perpetuity and only the income generated will be used.

Realising dreams
Participation in immersion programmes at top universities abroad can be costly. “Such international experience may be beyond the reach of students without financial assistance. Mr Ng Bok Eng's gift provides a source of financial support that will enable them to realise their dreams,” said NTU President Dr Su Guaning.

Mr Ng will also realise a dream of his own through the Ng Bok Eng Professorship. This was described by his son, Mr Ng Cheong Bian, as a desire “to develop teachers who inspire their students to greater heights”. The Professorship will enable NTU to appoint world-renowned scholars to help review and develop the NTU curriculum, give public lectures, conduct seminars, and undertake joint research projects with faculty.

Mr Ng, who counts among his heroes Nantah founder and philanthropist Tan Lark Sye, succeeded against the odds – with just four years of informal education – to become a leading entrepreneur. He started humbly as a plantation worker, peanut soup-seller, and coolie, but was soon bitten by the entrepreneurial bug. He reached the pinnacle of his career managing several companies in Asia.

Inspiring success
“Setbacks were transformed into energy for striving ahead,” said Mr Ng Cheong Bian. It was during the Second World War that his father seized the opportunity to start an import-export business with friends. Other businesses followed, including Ng Bok Eng Holdings in 1969, founded to concentrate on property and securities investment.

The story of Mr Ng Bok Eng is an inspiring one, and his benevolence will certainly benefit our students and faculty – and many more generations to come.
Fresh grads snapped up, paid well

NTU graduates are popular; a graduate employment survey shows their mean gross annual salary even rose over the previous year

Upbeat economy or no, the NTU graduate is a popular choice with employers. A survey of 3,345 of our graduates from the Class of 2003 bears this out.

In fact, the survey found that the 2003 graduates, as compared to the Class of 2002, were paid, on average, $690 more per year, enjoying a higher mean gross annual salary of $29,685. About 50 graduates earned more than $44,000 a year.

Despite financial cutbacks last year, the private sector continued to employ the bulk of our new graduates, snapping up about 76% of them.

90% hired within six months

The highest earners were teachers fresh out of the National Institute of Education (NIE) at NTU, with Bachelor of Science (Ed)/(Dip Ed) graduates topping the list; their mean gross annual salary was $33,974.

Materials Engineering and Electrical & Electronic Engineering graduates were also paid well, drawing mean annual starting salaries of $32,329 and $32,076 respectively.

About 89% of fresh graduates were employed at the time of the survey.

Nine in ten found a job within six months of their final examinations and almost half landed job offers within a month of completing their exams.

Remarkably, more than a quarter secured jobs even before their final examinations were over.

Our new graduates also ventured abroad, starting their careers in 13 foreign countries, including Australia, China, Germany, India, Japan, South Korea, UK, and the US.

The survey was conducted by the Office of Professional Attachments (OPA) over an 11-week period from 15 October 2003 to 2 January 2004. The overall response rate of 82.7% was the highest ever achieved in the annual survey.

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“...” said Mr Ng Boon Hwang, Director of OPA.

The survey findings were released on 11 March.
There is a new centre studying terrorists and their acts of violence. Singapore’s Home Affairs Minister, Mr Wong Kan Seng, launched the International Centre for Political Violence and Terrorism Research (ICPVTR) at the Institute of Defence and Strategic Studies (IDSS) on 20 February.

Focusing on the Asia-Pacific region, particularly Southeast Asia, the centre aims to help counter-terrorism professionals understand the trends and underlying causes of the problem, and develop effective responses to root out terrorism in the region.

“It is our intention to create a specialist centre on terrorism research as well as provide the best available counter-terrorism education and training,” said renowned terrorism expert Dr Rohan Gunaratna, who heads the centre.

ICPVTR has three components – a comprehensive database, a training curriculum, and an education programme. The terrorism database includes domestic and international incidents, group profiles, and personality profiles. The training course will groom regional governments and their extra-regional counterparts to strengthen and enhance counter-terrorism capabilities in Southeast Asia. The education programme aims to increase public awareness of terrorist threats.

The centre is staffed by 16 functional and regional analysts from Asia, the Middle East, Africa, Europe, and North America. Their diverse backgrounds – academic, religious, law enforcement, military, and intelligence, among others – reflect the centre’s multi-pronged approach to combating terrorism.

A multinational team of experts at the International Centre for Political Violence and Terrorism Research is putting terrorist acts under the microscope

US security chief speaks at IDSS event

All ears were on Mr Tom Ridge, the US Secretary for Homeland Defence, as he called for sustained international cooperation and a global response in the fight against terrorism.

Mr Ridge, delivering the IDSS Distinguished Public Lecture on 9 March, also commended Singapore for being an active and integral participant in the global coalition, through its efforts to root out the Jemaah Islamiyah terrorist operations.

Congratulating IDSS on the recent opening of its new international terrorism centre, he said the free and open exchange of ideas was the “foremost instrument of international understanding” and “fundamental to a peaceful and cooperative global security environment”.

Launching the centre. Minister for Home Affairs Mr Wong Kan Seng congratulates Dr Andrew Chew, Chairman of the IDSS Board of Governors (right)

A “novel” partnership with the National Cancer Centre

New-age molecular tools and smart biosensing systems are being developed

To reach the pinnacle of life sciences knowledge, NTU and the National Cancer Centre (NCC) have synergised their talents to develop novel molecular tools and biosensing systems for applied and basic biomedical research. Both parties signed a Memorandum of Understanding (MOU) on 1 March at NCC.

The NTU-NCC collaboration is not new. The MOU formalises and extends existing research ties covering pioneering studies in all areas of biomedical sciences and nanotechnology.

For example, NTU’s materials scientists have been working with NCC researchers to develop nano-plexes for gene delivery. NIE and NCC are also pioneering novel “smart” polymers and self-assembled polymeric surfactants for drug and gene delivery. Advances in oncology imaging look promising. The NTU-NCC partnership has even yielded SYSTOME – a spin-off company between NCC, the Defence Medical Research Institute, and NTU. A boon to the pharmaceutical and biotech industries, SYSTOME offers an efficient and cost-saving computational approach to drug-testing through simulation of metabolic pathway activities.

At the signing-ceremony, Prof Soo Kee Chee, Director of NCC, envisioned the alliance building a powerhouse of graduate students at NTU who will fuel the next phase of biosciences and engineering. Dr Su Guaning, NTU President, recognised the benefits of substantial cross-appointments, with NTU academics working as visiting scientists in SingHealth and NCC scientists holding appointments in NTU.
Jumpstarting EMC design and training: (From left) MOU signatories Prof Cheong Hee Kiat, NTU Deputy President, and Mr Quek Gim Pew, CEO, DSO National Laboratories

$10 million EMC centre
NTU and DSO National Laboratories team up to advance EMC technologies for military and civilian systems; the new research and training centre is expected to be ready in 2006

EMC, or electromagnetic compatibility, is key to the design of electronic systems – and a hot area of research today. This is because many devices, including military systems, have been known to malfunction due to electromagnetic interference (EMI), which happens when wireless applications and electronic devices produce intentional and unintentional radio signals.

If Singapore’s navigation, guidance, and other defence systems fail due to the problem of EMI, our defence capability could be compromised.

Recognising the importance of EMC – and its relevance to both military and civilian system design – NTU and DSO National Laboratories signed a Memorandum of Understanding (MOU) on 24 March to set up the Joint Electromagnetic Compatibility (EMC) Research Centre at NTU.

DSO will fund construction of the building and EMC research facility to the tune of $10 million. NTU is now identifying a suitable site on campus for the centre, which is expected to be operational in March 2006.

Both parties will team up to give proper consideration to EMC design in the integration of navigation, guidance, and communication components for military weapons systems. Joint projects in defence electronics, including EMI and EMC technologies, will be pursued and both organisations will link up with the industry to further the field. The centre will also conduct EMC training.

The significance of EMC as a field of study cannot be ignored. Due to the enforcement of international EMC regulations, new electronic products will not be able to gain access to the global market if they fail to meet the EMC requirements. Expertise in cost-effective EMC design is vital for a country like Singapore, where electronics exports comprise a substantial portion of our nation’s total exports.

SCE’s VR expertise sought in Vietnam
A group of academics from the School of Computer Engineering (SCE), led by Dean Assoc Prof Seah Hock Soon, visited the Institute of Information Technology (IOTT) in Vietnam from 23 to 26 March to help set up the country’s first Virtual Reality (VR) Laboratory. The four-member delegation also gave a technical workshop on VR and OpenSG. The workshop was a good platform for the SCE dons to showcase their school’s current research projects and to jumpstart new collaborations in teaching and research. SCE also expects to tie up with other IT institutions in Vietnam through IOTT, in strategic partnerships that synergise the School’s research expertise and Vietnam’s resources.

NTU to host world conference on work-integrated learning

Educators, industry chiefs, and government leaders will work towards advancing work-based education globally; NTU students could benefit from new cross-border internship programmes

In a coup for the University’s internationalisation efforts, NTU will host the 15th World Conference on Co-operative Education – the premier international convention on work-integrated learning – after winning a competitive bid to host it.

The World Conference, scheduled for July 2007, is a biennial event of the World Association for Cooperative Education (WACE), recognised as the leading international organisation for the advancement of cooperative or work-integrated learning worldwide.

Universities and corporations, including 700 work-integrated learning experts from more than 300 universities in 55 countries, will share best practices in the management and execution of internship programmes, as well as further work-integrated learning – a strategy combining classroom learning with learning on the job – between universities and industry.

Mr Peter Franks, CEO of WACE, and Deputy President Prof Er Meng Hwa, representing NTU, signed a contract on 7 April for the hosting of the WACE 2007 conference in Singapore.

“It is a particular pleasure for WACE to be associated in this venture with this world-class institution and the wonderful venue of the Asia-Pacific region,” said Mr Franks.

NTU won the bid to host the prestigious WACE World Conference in competition with other top universities in Rotterdam last September. The Office of Professional Attachments (OPA) will lead the conference.

“Hosting the World Conference will thrust NTU into a leadership position in the global network of work-integrated education,” said Mr Ng Boon Hwang, Director of OPA. “It will also create new cross-border internship opportunities for our students.”

Bright future for work-based learning: (Right) Mr Peter Franks, CEO of WACE, and Deputy President Prof Er Meng Hwa at NTU
Where research runneth over

Although the Research TechnoPlaza – or more handily RTP – has four research corridors, it infuses multidisciplinary knowledge into every project and commercial venture.

It is hard not to be awed by the Research TechnoPlaza (RTP), completed just last year behind the Nanyang Auditorium. After all, its bold architecture and expansive glass façade makes it stand out. And once inside, you get a tingling feeling that something big is cooking behind its walls.

To be exact, cutting-edge research is brewing within the RTP – a nine-storey, 40,000m$^2$ microcosm of high-tech.

“Many months before I joined NTU, the leadership team at NTU had the foresight and the fortitude to design, build, and open a research window to the outside world,” said Prof Tony Woo, who was appointed Vice President (Research) at NTU in January this year.

“The outside world includes everything from the schools, chambers of commerce, local and multinational companies, universities, and agencies from other countries, all the way to venture capitalists.”

Assoc Prof Bryan Ngoi from the School of Mechanical & Production Engineering chaired a meeting last year to chart the directions of the RTP.

This “strong research entity”, as he calls it, aims to break research frontiers and cross scientific borders.

**BorderX and XFrontier**

Its two research blocks – the XFrontier Block and BorderX Block – house four research corridors and six centres, including a $5m Reality Theatre equipped with a 2.6m-high, 150-degree cylindrical screen and state-of-the-art facilities for 3D simulation.

“The names of the two blocks at RTP symbolise its concept and reinforce the initiative to start the RTP,” explained Assoc Prof Ngoi, who is the Director of the NanoScience and NanoTechnology Corridor (NNC) at RTP.

Although the four research corridors focus on different strategic research areas, cross-disciplinary work is pursued.

“In the past, there was a lack of interaction between the different research centres,” said Assoc Prof Ngoi. “RTP, acting as a catalyst, has been successful in strengthening interdisciplinary research and pulling pockets of research together.”

Said Prof Woo: “The teams are interacting, working across floors. It is quite impressive.”

In fact, at NTU, interdisciplinary and borderless research is at an all-time high; a broad spectrum of work – from nanotechnology to biomedical research – now takes place under one roof, across schools and over high-speed grids.

**A hotbed for researchers**

Apart from initiating research, the RTP will be the new breeding ground for budding researchers.

With the high number of ongoing research projects there, undergraduate students will have many opportunities to pursue industry-relevant research during their studies. Some may be stimulated enough to take up full-time research in the future, while others may be inspired to choose the path of technopreneurship, said Assoc Prof Ngoi.

“A café is also in the pipeline. As Assoc Prof Ngoi put it: “Now that the RTP has seen full occupancy, the next phase will be to create a vibrant environment for research and interaction, not just within the centres or corridors, but NTU as a whole.”

**What’s cooking at RTP**

These are the four interdisciplinary corridors and six centres at the Research TechnoPlaza:

- Computer Simulation & Modelling Corridor
- Broadband & Wireless Communication Corridor
- NanoScience & NanoTechnology Corridor
- BioEngineering Corridor
- Virtual Reality Centre
- Centre for High Performance Embedded Systems
- Environmental Engineering Research Centre
- Intelligent Systems Centre
- Nanyang Technopreneurship Centre
- Temasek Laboratories
Rich pickings at new schools

The School of Humanities & Social Sciences (HSS) and School of Art, Design & Media (ADM) will offer challenging and creative curricula covering a broad spectrum of disciplines

When NTU becomes a comprehensive university in 2005, it will offer a richness and diversity never seen before in local tertiary education. We spotlight the School of Humanities & Social Sciences (HSS) and School of Art, Design & Media (ADM), two of three new schools being established. The third school is the School of Physical Sciences.

Humanities & Social Sciences

This July, HSS will launch a four-year Bachelor of Arts (Honours) programme in Economics, and Minors in five disciplines – Chinese, Economics, English, Psychology, and Sociology.

By July next year, its five divisions will offer a full range of BA (Honours), Master’s, and PhD programmes to about 200 students. BA students will be admitted directly into the Major of their choice in the first year of study.

The Economics programme at HSS will replace the Applied Economics specialisation in the Bachelor of Business programme, which is being phased out.

The Applied Economics programme was launched at the Nanyang Business School in 1993. Today, NTU has over 30 economists active in academic research, economic forecasting, and policy analysis.

The new BA programme in Economics, with an initial intake of 50, will build on this expertise. Students can tailor their curriculum, choosing from a wide range of subjects, to suit their specific interests, although they will be encouraged to combine their options into three groups: Development and Public Policy, Finance and Business, and Quantitative Economics.

Like all NTU undergraduates, they take General Electives and Minors as part of their broad-based education.

Art, Design & Media

The pioneering School of Art, Design & Media (ADM) will offer a top-notch education for those passionate about the creative processes in media, design or art & technology.

It will launch in July 2005 with an initial intake of 100 students, who will be groomed to advance as creative artists, thinkers, and future leaders in areas such as animation, digital cinema, scriptwriting for film and animation, game and interactive design, visual communication, object design, photo and sequential arts, installation and interactive design, virtual reality, ride and narrative arts, installation and sequential arts, installation and sequential arts, installation and sequential arts.

The undergraduate and postgraduate curriculum is designed to develop creativity, innovation, exploration, and professional expertise. To cultivate international thinking, the school will make available opportunities for interaction with visiting artists, scholars and presenters, as well as student and faculty exchanges for exposure to the world’s cultures, ideas, art, and history.

The four-year undergraduate programme in media, design and art & technology will lead to an internationally recognised Bachelor of Fine Arts degree. Students do a rich year of foundation studies and liberal arts and humanities subjects throughout their studies. They either specialise in a given area of personal interest or customise their own programme of study.

The Master’s and PhD degree programmes will act as “creative incubators” for the development and realisation of original artistic or commercial scripts, designs, productions, games, and new forms of creative ventures. The synergy between the Master’s and PhD schools will encourage and support original and innovative intellectual property development. Special creative studios, including a “Visiting Arts Atelier”, will provide a stimulating environment for internationally renowned creative professionals in media, design and arts to realise their own projects while also mentoring our students.

Like HSS, ADM will offer a slew of enrichment courses – as Minors and General Electives – in its areas of speciality to other undergraduate and graduate students. It will also provide continuing education, including a specialist graduate diploma programme, for working professionals interested in expanding their creative, conceptual, and production skills in both traditional and newer forms of art & technology, design and media.

Cross-campus wireless surfing

Tertiary students can now surf wirelessly – and for free – at one another’s campuses. For example, NTU students residing near the National University of Singapore (NUS) or visiting its Kent Ridge campus can make use of NUS hotspots to access NTU e-services. This is thanks to Project EDUWIN (Educational Wireless Network), a joint initiative by the local Institutes of Higher Learning (IHLs) to have their wireless LAN hotspots linked up. Surfing at any of the 10 participating IHL campuses is free for all staff and students. To surf from another campus, students simply whip out their wireless-enabled notebooks or personal digital assistants and log on to the institute’s network to gain access to their own university’s or polytechnic’s network. At present, six IHLs – NTU, NUS, Singapore Management University, Nanyang Polytechnic, Republic Polytechnic, and Singapore Polytechnic – are “EDUWIN-ready”; the rest will be linked up by the end of the year.

Information overloaded? Not them!

Information literacy programmes run by the NTU Library have been helping students tap the wealth of online resources available to them. It’s goodbye to the days of “information overload”, as students are now equipped to explore, find and exploit only the information they need. For example, final-year students from the Nanyang Business School go through an Advanced Research Seminar, which prepares them for their final-year project work.

Students from other NTU schools also attend instructional workshops to learn how to develop and apply successful information search strategies. Information literacy programmes will eventually be embedded in the undergraduate and graduate curricula.
Students drive video recording of lectures

Volunteers from student clubs have been recording lectures and uploading them on the Web for their peers.

Educational Development (CED) worked together on a project to record lectures. CEC recruited students to carry out the recordings, while CED provided the infrastructure support and training. The recordings are done at specific lecture theatres. Each recording is uploaded onto a dedicated server provided by CED. When the uploading is completed, the professor receives an email telling him his lecture is online.

He uses a web link generated by the system to access the recording. He can then decide whether to provide a link for his students to access the recorded lecture via edveNTUre, the University's e-learning system. Once he activates the link to edveNTUre, the recording can be viewed online by the students.

In just two months, CEC recorded a total of 232 hours of lectures covering 14 subjects in the School of Computer Engineering.

11,000 hits

During that time, some 11,000 hits were registered on the recordings, indicating a high demand for them.

The model caught on, and in January this year, the School of Mechanical Engineering Club and NTU Students’ Union (NTUSU) adopted it. Volunteers from NTUSU have been recording lectures for first- and second-year Common Engineering subjects at the Main Lecture Theatre.

A recent survey by CED found that 93% of our students want their lectures to be archived. The video recordings are a boon for self-paced revision, and through auditory and visual communication, also greatly enliven learning.

Top-flight aerospace training

Revamped aeronautical engineering final-year specialisation; a chance to study at Delft University of Technology, with largest aerospace faculty in Western Europe.

The School of Mechanical & Production Engineering (MPE) has revamped its Aeronautical Engineering final-year specialisation to produce a new breed of mechanical engineers with a strong grounding in aerospace engineering.

From July this year, final-year MPE undergraduates opting for the Aeronautical Engineering specialisation will have the opportunity to sub-specialise in either MRO (maintenance, repair and overhaul) & manufacturing, or design modification in either airframe, aircraft systems or aircraft engines.

MPE recently signed a Memorandum of Understanding (MOU) with the Faculty of Aerospace Engineering, Delft University of Technology (TU Delft), on an international student exchange programme.

TU Delft is the oldest university of engineering sciences in the Netherlands. It has a strong tradition of teaching and research excellence in aerospace engineering, and is well equipped with several wind tunnels, a simulator and a Cessna jet adapted for education and research. A recent TU Delft innovation is a fibre-reinforced material, GLARE, which will be used in the fuselage of the new Airbus A-380.

Under the terms of the MOU, MPE students proceeding to their third year of study can apply to pursue a one-semester course in TU Delft, which has the largest aerospace faculty in Western Europe, while MSc students from TU Delft can come to Singapore to do research internships at MPE or at aerospace companies NTU has ties with.

The NTU-TU Delft student exchange programme is welcomed by the Economic Development Board (EDB), which aims to develop Singapore into a global aviation hub. Last year, the output of Singapore’s aerospace industry was $3.8 billion.

Commenting on the tie-up, Assoc Prof Jeffrey Low, who coordinates the aeronautical engineering curriculum at MPE, said: “Selected students with a keen interest in aerospace engineering can read a diverse suite of aerospace subjects at TU Delft to complement what is being taught at NTU.”

MPE has been active in aeronautical engineering education for over 14 years. The specialisation in Aeronautical Engineering is one of eight final-year specialisations offered to MPE undergraduates.
Electrical & Electronic Engineering (EEE) students have been acing student paper contests, such as the one organised annually by the Institution of Engineers, Singapore (IES).

Scoring a hat trick for NTU this year, Singapore-MIT Alliance graduate student Cai Huaning and project officer Chen Qing, supervised by Assoc Prof Er Meng Joo and Assoc Prof Foo Say Wei, triumphed in the Electronics and Computer Engineering category of the 2003 IES student paper contest. Their paper, “Adaptive Noise Cancellation Using Dynamic Fuzzy Neural Networks”, showcased the superiority of a unique learning algorithm that is suitable for real-time applications. It beat 21 entries from NTU, the National University of Singapore and Singapore Polytechnic, repeating the previous year’s win by EEE students.

Master’s students Yu Jia and Chan Tuck Han, also supervised by Assoc Prof Er Meng Joo, topped the Health and Safety Engineering category with their paper, “Development of an Ultrasound Imaging Algorithm for Detecting Breast Cancer”. They described a novel algorithm based on Fractal Approximation that sharpens ultrasound images of the breast. This facilitates early detection of breast cancer. Better yet, their algorithm differentiates malignant tumours from benign cysts, so women can be spared the trauma of biopsies.

Also on the NTU winners’ roll was doctoral student Lee Chee Wei, who clinched the top prize in the category of Mechanical and Electrical Engineering. Chee Wei’s study on “Nano-scale Displacement Measurement of Microelectromechanical Systems (MEMS) Devices Using Fiber Optic Interferometry” was supervised by Assoc Prof Liu Ai Qun and Assoc Prof Tjin Swee Chuan from the Photonics Research Centre (PhRC), EEE.

Some Computer Engineering students have joined their professors in producing innovative applications that run across grid infrastructures.

Two such applications won the Gold and Silver Awards – with cash awards of $3,000 and $2,000 respectively – at the Inaugural Grid Innovations and Applications Competition in January. The Bronze Award went to a team from Nanyang Polytechnic.

The teams demonstrated their projects live on the Grid to a panel of judges from the National Grid Office, Institute of High Performance Computing, Infocomm Development Authority, and Sun Microsystems.

Computing grids are geographically separated computers or computer clusters that share applications, data, and computational resources. In grid computing, the Internet is harnessed to create virtual supercomputers.

Observing that some data grids lack facilities for managing and sharing data, Gold Award winners Tang Ming and Lim Teck Meng introduced user-friendly data access and management services in their project, *Data Management for the IBP-based Data Grid*. Working under the supervision of Assoc Prof Yeo Chai Kiat, they also increased the storage capacity of the data grid and speed of data access.

Guided by Asst Prof Ong Yew Soon, Silver Award winners Ho Quoc Thuan and Dudy Lim developed the *Grid Application Deployment Kit* to make grid environments more user-friendly and, therefore, more accessible. This means everyone – from students and engineers to scientists – can more fully utilise the resources of the Grid.

NTU has been pioneering grid computing activities in Singapore through the School of Computer Engineering. It is a major stakeholder in the National Grid Pilot Project, launched in November 2003.
Students

Judges’ picks at NTU-JC-DSTA-DSO Challenge 2004

It was gadgets galore when 270 students from Singapore’s junior colleges (JCs) and centralised institutes showcased their inventions at the finale of the NTU-JC-DSTA-DSO Challenge on 14 February.

Spotted outside LT 1 were racy ideas ranging from plasters that trigger clotting, to electricity-generating floor tiles, to air-bicycles for crossing mine-fields! The School of Materials Engineering, the programme host, provided the motivation and technical support for these innovative projects.

The students were issued the challenge last November to use advanced materials in novel defence, lifestyle, and medical applications. At the Challenge finale, seven prizes were awarded.

To the delight of Hwa Chong Junior College, Pioneer Junior College, and National Junior College, they each collected two awards from the Guest-of-Honour, Mr Quek Gim Pew, CEO of DSO National Laboratories.

The annual NTU-JC Challenge promotes creativity in science and technology. Defence Science & Technology Agency (DSTA), DSO National Laboratories (DSO), and Mensa Singapore (NTU Branch) co-organised this year’s event.

Smart suit, cooling fabric,

Heated exchange: Mr Quek Gim Pew and NTU Deputy President Prof Er Meng Hwa are all ears as a student from St Andrew’s JC explains how wasted heat from laptop computers can be recycled. The heat is converted into electricity using thermoelectric modules (TEMs) and channelled back into the laptop.

Cool and doubly happy: National JC beats the heat with a cooling fabric that can be worn under clothes and helmets. Cooling is automatically activated in hot weather. Although designed to prevent heat stroke in military personnel, their invention also benefits the man in the street.

Smart suit for soldiers? Mr Quek Gim Pew, CEO of DSO National Laboratories, checks out a waterproof suit created by the Hwa Chong JC team. This suit not only self-dries and kills bacteria, but also dispels heat and insulates when it gets too hot or too cold!

Science pioneers: This “magic bullet” is a magnetic capsule that delivers anti-cancer drugs to cancerous parts of the body without harming normal cells. The drug carrier is made from a unique combination of iron magnetic powder and medical gelatin. A Pioneer JC invention!

Top JCs (including three double winners!)

Pioneer JC - AMT Best Innovation (Biomaterials/Bioengineering) Prize & Institute of Materials (East Asia) Best Exhibition Prize

Hwa Chong JC - Shimadzu Best Innovation (Defence/Aerospace) Prize & Materials Research Society Best Poster Prize

National JC - JEOL Best Innovation (Lifestyle) Prize & PANalytical Best Presentation Prize

St Andrew’s JC - Volex Best Innovation (IT/Nanotechnology) Prize
Don’t be content to inherit and enjoy what your parents have built. Instead, “change it, improve it, and build on it,” came the rallying call from the affable Deputy Prime Minister (DPM), Mr Lee Hsien Loong. The two-hour forum organised by the NTU Students’ Union, which included a question-and-answer session, centred on the theme of “Hopes, Fears and Dreams”.

In the jam-packed Nanyang Auditorium, DPM Lee assured the undergraduates that with a good education, coupled with a healthy dose of passion, all of them could fulfill their hopes and dreams in Singapore. He also addressed some of their fears, including competition with foreign talent, unemployment, and Singapore’s future.

“Being small does not mean we cannot achieve big things. It is the quality of the people, their drive and imagination, which counts,” he said.

And Singapore should endeavour to be a vibrant and cosmopolitan city, attracting the best and brightest from around the world.

But what brought on the hoots was talk of matchmaking, when DPM Lee read out a sample matrimonial ad from an Indian newspaper, in a bid to show that marriage is “a desirable goal in life” and “something which there is no reason to feel coy about”.

Raising the “delicate subject” to tackle the problem of “too few babies”, he said that “by leaving things to chance, many remain single”. The Social Development Unit (SDU) could offer “discreet” assistance. “I assure you that if you try out any of their activities, you will find many people who are Sexy, Desirable and Unique,” he said to much laughter.

He also mentioned some private matchmaking agencies and online dating services.

Encouraging the students to strike out on their own, he said that entrepreneurship is not just for a select few. “Some people claim that a university education actually makes you less suited to become an entrepreneur. I hope you will prove them wrong.”

As if to make his point, he singled out four NTU-bred entrepreneurs – Vincent Lee, Dr Saw Lin Kiat, and Ho Kok Hiang, who founded Inflexion Pte Ltd, a start-up providing medical diagnostics solutions, and 23-year-old undergraduate Michelle Tan, who became an undertaker.

On the Singapore he hoped to see evolve under the present generation, he said: “Make it something better, something your parents never imagined, something special and unique…” 

Lots of smiles, but the serious messages were not lost on the students, seen here with DPM Lee at the post-forum reception.
New journal tackles innovation, technology management issues

**NTU don is Editor-in-Chief**

Assoc Prof Tang Hung Kei is making headway for NTU as founding Editor-in-Chief of the International Journal of Innovation and Technology Management (IJITM).

The journal, launched in March, presents the latest ideas, research findings, industry best practices, and trends in innovation and technology management.

Published by World Scientific Publishing Pte Ltd, it was launched just one month after the founding editorial team submitted their proposal for it. "Prof K K Phua, Chairman of World Scientific Publishing, has been very supportive of the journal from the start," said Assoc Prof Tang.

The journal’s International Advisory and Editorial Boards comprise esteemed professors from institutions such as MIT, Harvard, Cambridge, SPRU (UK), INSEAD, and National Science Foundation China.

Assoc Prof Tang, who lectures at the School of Electrical & Electronic Engineering and Nanyang Business School, worked closely with Assoc Prof Xie Min from the Department of Industrial & Systems Engineering at the National University of Singapore, to make the journal a reality.

"In fact, it was he who first mooted the idea for such a journal based in Singapore," said Assoc Prof Tang.

Both professors are now organising – Assoc Prof Tang as General Chair and Assoc Prof Xie as a Programme Chair – the 2004 IEEE/IEE International Engineering Management Conference on "Innovation and Entrepreneurship for Sustainable Development", to be held in Singapore this October.

**Popular economics textbook now bigger and better**

**Eminent economist Prof Lim Chong Yah launches the second edition of his popular book, Southeast Asia: The Long Road Ahead**

With the strike of a gong, the eagerly-awaited second edition of Southeast Asia: The Long Road Ahead was unveiled on 6 February at NTU.

Written by renowned Singapore economist and NTU Professor of Economics Prof Lim Chong Yah, the book is a serious, concise, and comprehensive study of various important economic issues confronting Southeast Asia. It was first published in 2001. The second edition features updated statistics and information, and new analyses. Each chapter now ends with a helpful discussion guide.

Like the previous edition, the book covers the main economic challenges facing the 10 Southeast Asian countries and offers invaluable policy recommendations and practical advice on development issues.

The impact and accessibility of the book is evident – Boston University, University of Hawaii, University of Strathclyde, University of Utah, University of Wisconsin, and Australian National University have all adopted it as a text. It is also required reading for local university students of economics.

"Professor Lim writes on a broad canvas, but with great attention to detail and much insight," said reviewer Prof Hal Hill, Heinz Arndt Professor of Southeast Asian Economies at the Australian National University. "He combines clarity of expression with an authoritative style and deep country knowledge."

The book launch, officiated by NTU President Dr Su Guaning, was attended by 150 of Prof Lim’s friends and colleagues, who Dr Su said “respect him greatly and love him dearly”.

Spotted at the convivial gathering were Danish Ambassador Dr Ørstrøm Møller, Chinese Ambassador Mr Zhang Jiuhuan, dignitaries from the Malaysian and British High Commissions, luminaries from the private sector, Prof Lim’s eminent family members and their spouses, and academics from several local universities.

A prolific writer, Prof Lim has authored, co-authored and edited 26 books, 30 chapters in multi-authored volumes, and 65 articles in refereed learned journals. His publications have been translated into Chinese, Malay, Japanese, and even Braille.

The royalties from the sale of his latest book will go to the NTU Student Emergency Fund, set up to help students in dire straits. The fund, administered by NTU, was set up by Prof Lim with fees he received from his public lectures.
Dr Stephen Osiyemi is, quite literally, making a name for himself in the field of fracture mechanics, a branch of materials engineering.

A model he proposed 14 years ago, recently published in the International Journal of Adhesion and Adhesives, was formally named the KO model (Kinloch-Osiyemi model), after him and his former mentor, Prof A J Kinloch, a professor of adhesion at Imperial College London.

The KO model calculates the fracture energy of adhesively bonded single lap joints. Aircraft engineers, for example, can use it to predict how long an airplane part will last after repeated exposure to harsh weather conditions.

Dr Osiyemi teaches at the School of Materials Engineering. He first showcased this model in 1991 in his PhD thesis, supervised by Prof Kinloch.

The KO model has since received considerable attention in the field of adhesion science. It has won awards and captured the attention of manufacturers. In all sectors of manufacturing, the fracture energy of engineering materials is a major factor in product design.

Using the KO model, a design engineer can predict how long an adhesively bonded joint will last when exposed to environmental stressors such as moisture, sub-zero temperatures, and sea water. This means that products can be designed to prevent the growth of cracks due to wear and tear.

Since the single lap joint – a lapping of one substrate over another with the adhesive in the middle – is the industry standard for adhesively bonded joints, industrial manufacturers of adhesives can include the fracture properties of adhesives in their product specifications to better meet the needs of manufacturing companies. Currently, the quality of an adhesive can only be measured by its lap shear strength. In future, structural adhesives may be graded by their KO-Energy values instead.

“Our hope is that the model will become an industrial standard that supplements the current ASTM D1002-92 standard for adhesives,” said Dr Osiyemi, who is working with major adhesive manufacturers in Singapore, such as 3M and Loctite, to further refine his model.

He added: “It is amazing that an idea borne at a corner desk by an unassuming PhD student could emerge into a tangible success. My advice to all students is work hard, use your imagination, and believe in yourself. You never know, your project could turn out to be a scientific gem!”
PR book wins US award

It’s been named the best PR book of 2003. The Global Public Relations Handbook, co-edited by Assoc Prof K Sriramesh from the School of Communication & Information, earned this honour with the PRIDE Award given by the Public Relations Division of the National Communication Association (NCA) in the US.

Founded in 1914, NCA is the oldest and largest national organisation serving the academic discipline of Communication.

The Chair of the PRIDE Committee noted that “the Committee unanimously selected [this book] due to its comprehensiveness and quality in an increasingly important area of public relations research... This is indeed a ‘handbook’, a book graduate students, faculty, researchers, and practitioners will want in their collection of essential texts.”

Assoc Prof Sriramesh recently edited another book, Public Relations in Asia: An Anthology, which describes the status and structure of public relations in ten Asian countries.

EEE draws industry, forges new partnerships

The School of Electrical & Electronic Engineering (EEE), one of the biggest electrical engineering schools in the world, has been collaborating with the electronics industry in a big way. Other than professional expertise, the school also offers state-of-the-art fabrication and characterisation tools and equipment for joint R&D pursuits.

Taking collaboration activities to new heights, the school engaged 124 senior executives and R&D professionals from 61 organisations in Singapore in a “Dialogue with Electronics Industry” on 10 March.

Organised by the Division of Microelectronics and Division of Circuits and Systems, the session stirred up interest in new win-win partnerships as organisations heard about the numerous student and staff research projects they could participate in, as well as the tailored training programmes to upgrade their managers and engineers. Issues in intellectual property were also discussed.

EEE is very keen to enhance its ties with the electronics industry because it firmly believes successful university-industry partnerships fuel innovation.
Heart-to-heart with the Education Minister

Acting Education Minister Mr Tharman Shanmugaratnam (left) visited NTU on 30 March to get an update on university developments. He was treated to a series of presentations showcasing NTU’s recent initiatives to mould global leaders and exemplary teachers and researchers, and advance knowledge. During a lively heart-to-heart, several students and professors jumped at the chance to share their views on teaching and learning. The three-hour meeting was held at the Nanyang Executive Centre.

New Appointments

Prof Cheong Hee Kiat, Dean, Graduate Studies
Prof Hong Hai, Dean, Nanyang Business School (from 1 July 2004)
Mr Choy Fatt Cheong, Librarian
Ms Tan Su Yuen, Director of Corporate Communications
Assoc Prof Weining Chu Chang, Head, Division of Psychology, School of Humanities & Social Sciences
Assoc Prof Shankar Muthu Krishnan, Head, Division of Bioengineering, College of Engineering
Assoc Prof Lok Tat Seng, Sub-Dean (Alumni Relations), School of Civil & Environmental Engineering

School of Computer Engineering:
Assoc Prof Lee Bu Sung, Vice-Dean (Research)
Assoc Prof Lau Chiew Tong, Head, Division of Computer Communications
Assoc Prof Leedham Charles Graham, Head, Division of Computing Systems

School of Materials Engineering:
Prof Freddy Boey Yin Chiang, Acting Dean, School of Materials Engineering (from 1 June 2004)
Assoc Prof Ma Jan, Vice-Dean
Assoc Prof Subodh Gautam Mhaisalkar, Head, Division of Materials Technology
Asst Prof Lee Pooi See, Sub-Dean (from 1 June 2004)

Visitors

During the period January to March 2004, the University received the following distinguished visitors:

2 Jan
HE Zhang Jiuhuan, Ambassador, Embassy of the People’s Republic of China

19 Jan
Dr John Wiley, Chancellor, University of Wisconsin-Madison, USA

10 Feb
Prof Lin Jintong, President, Qinghua University of Posts and Telecommunications, PRC

12 Feb
Prof Lu Shijie, President, Zhejiang University City College, PRC

1 Mar
Prof Dr Wolfgang Kersten, President, Hamburg School of Logistics, Germany

30 Mar
Mr Tharman Shanmugaratnam, Acting Minister for Education, Singapore

During this period, the University also received visiting delegations from the Fujian Provincial Education Department and Middle Schools, Beijing City University, and Nantong Vocational College, China; the Taiwan Education Familiarisation Group; Chonnam National University, Korea; National Academic Recognition Information Centre, UK; King Mongkut’s Institute of Technology Ladkrabang, Loei Rajabhat University, Rajabhat Pranakorn Institute, Prince of Songkla University, Rajabhat Institute Suan Dusit, and Rajabhat Maha Sarakham University, Thailand; University of San Carlos, Philippines; Osaka City University, Japan; King Fahd University of Petroleum and Minerals, Saudi Arabia; Botswana National Commission for Science and Technology; the Finnish Polytechnics Delegation; the German Rectors Delegation; and the Global Tech Leaders Symposium Delegation.

Re-appointments

School of Materials Engineering
Asst Prof Lam Yeng Ming, Sub-Dean (from 1 June 2004)
Assoc Prof Thirumany Sridaran, Head, Division of Materials Science (from 10 July 2004)
Friendship Force of Nanyang (FFN), a non-profit organisation, is the brainchild of Ivan Ng, a final-year Mechanical & Production Engineering student.

It is affiliated to the US-based Friendship Force International, founded in 1977, which organises exchange programmes to promote friendship and goodwill between people of different nations. FFN, representing Singapore, joins some 350 clubs in over 60 countries already in the network.

“We want to provide the opportunity for all Singaporeans to make friends with people from other countries through homestays,” says Ivan. Singaporean members also open up their homes to guests from abroad.

Last December, FFN organised its first trip to Korea for students of NTU and the National University of Singapore. This June, 20 students will go on a seven-day trip to Japan.

A close-knit family
According to Ivan, the Friendship Force is a very close-knit family. The host receives the ambassadors, or visiting club, out of goodwill with no monetary benefits.

Ivan hit upon the idea of FFN after organising two successful homestay trips to Japan during his stint as President of the Japanese Appreciation Club in NTU. The name “Nanyang” was chosen to reflect the organisation’s genesis in NTU. Many of the office bearers are also recent NTU graduates.

Ivan says: “Building friendships beyond boundaries is our goal and we hope to see more Singaporeans joining us.”

And why not? After Japan, FFN will be visiting New Zealand and, next year, they’ll be touching down in Brazil.

For more information or to join FFN, visit www.ffn.org.sg.

1,576 steps to becoming a sportswoman
It takes more than just a few steps to be the reigning sportswoman in NTU. Especially when it means conquering a total of 1,576 metal steps up one of the Big Apple’s most dazzling and prominent buildings.

But the Empire State Building – lying smack in the middle of the New York commercial hub – was no barrier for third-year undergraduate Jeanette Wang at the New York Empire State Building Run-up held on 3 February this year.

Against the picturesque backdrop of glinting skyscrapers, the seasoned runner from the School of Communication & Information – who represents NTU in track and field and road racing – dashed up all 86 floors of the building.

Though only her second attempt at a vertical marathon, she battled immense competition as well as oxygen-thin air to clinch gold with a time of 15 minutes and 53 seconds for the 20 to 29 age group, a minute faster than the time set by the previous Singapore representative.

For the NTU Sportswoman of the Year (2003) – and new NTU Sports Scholar – the New York experience was exhilarating. “If I can make it there, I’ll make it anywhere,” she says.