

Not too young for university

NTU opens its undergraduate courses to talented secondary school and junior college students. Credits earned count towards future NTU degrees

Under this bold and unusual programme, bright students from Hwa Chong Junior College and The Chinese High School can have a foot in tertiary education when they take undergraduate courses at NTU.

From next January, Hwa Chong students can enrol for two first-year courses over a four-month semester to earn academic units that count towards an NTU degree. With fewer courses to complete when they enter university later on, they can graduate faster.

A full-blown programme is expected by 2006, when the “through-train” scheme (Integrated Programme) is implemented in some Singapore schools. This allows secondary school students to skip O Levels and aim straight for the A Levels, freeing up studying time which could otherwise be spent on enrichment and out-of-syllabus activities.

Admission without A Levels a possibility

At a press conference, NTU President Prof Su Guanng said the University would consider admitting the exceptionally talented to full-time study without their having to take the A Levels.

Currently, NTU engages pre-university students through varied initiatives such as the annual NTU-JC Challenge and Technology and Engineering Research Programme (TERP).

The new programme implies the full university experience of attending lectures and tutorials, handing in assignments, and taking exams. NTU Deputy President Prof Er Meng Hwa feels it would excite those clear about their research interests or vocation, gunning for an early start in their careers.

“Giving them a head start”

“Virtuosos with entrepreneurial minds may want to hasten their studies so that they can go into full-time business sooner,” he said. “As for young professors and scientists in the making, we are giving them a head start to promising careers by recognising and meeting their insatiable appetite for new knowledge.”

“Virtuosos with entrepreneurial minds may want to hasten their studies so that they can go into full-time business sooner.”

– Prof Er Meng Hwa



Brainy kid!

So he's just having fun with dad, who's obviously keen for the little tyke to follow in his footsteps! Dad, like 5,410 other graduates, was a star at Convocation 2003. See Pages 8 to 11

Prof Er, who is overseeing the programme, said students must meet the enrolment criteria for the subjects of their choice, which could include an assessment of academic reports, CCA and leadership records, and written recommendations. NTU is in talks with Temasek Junior College, Victoria Junior College, National Junior College, and Raffles Junior College to implement similar schemes.

A new educational paradigm

“Hwa Chong and Chinese High students seem especially keen on aerodynamics, water and waste treatment, precision engineering, entrepreneurship, photonics, virtual reality, and even IC design,” said Assoc Prof Yeo Kiat Seng, who is helping to administer the programme.

While Mr Ang Wee Hiong, Principal of Hwa Chong Junior College, is excited about the “upstreaming” of the Hwa Chong Integrated Programme, Mr Hon Chiew Weng, Principal of The Chinese High School, is thrilled to embark on what he calls a “new educational paradigm for the holistic development of talented students and teachers”.



A discussion session followed the lecture by Prof Su Guaning (left). Prof Brian Lee chaired it

President engages brain trust of the University

Speaking to the Senior Common Room, Prof Su launches the Nanyang Distinguished Lecture series

Some 600 academic and administrative staff members attended President Su Guaning's inaugural address to the Senior Common Room (SCR) on the evening of 18 August. Setting a relaxed and open tone in the Nanyang Auditorium, in the manner of a matter-of-fact sharing with friends and colleagues, Prof Su highlighted some of the more important issues in executing his vision for the University.

Chief among these were those relating to two strategic approaches he had mentioned in his presidential inauguration speech in March – the student-centric approach and the professor-centric approach. Within the context of the former, he said, positive feedback from students on *The New Undergraduate Experience* initiative showed it had improved campus life. Other measures were being implemented to ensure that NTU produced top graduates for Singapore and beyond, not unlike top overseas universities.

The professor-centric approach, he continued, complemented this, as both teaching and research were the twin pillars of any university.

Referring to the Senior Common Room as the “brain trust” of the University, Prof Su invited all staff members to step forward and join him in catalysing the necessary changes, and to journey with him on the task of remaking NTU. Currently a leading technological university in Asia, NTU is being expanded into a comprehensive university with new courses of study.

The President's address also marked the launch of the Senior Common Room's Nanyang Distinguished Lecture series. SCR Chairman Prof Brian Lee said the series would not only promote good interaction and networking among the university community, but would also inject fresh ideas, as prominent people from various professions would be invited to address SCR members from time to time.

From best business idea to start-up



Prashant, Nishith, Romil, and Dev (left to right) with NTU Deputy President Prof Lim Mong King

Put your innovative idea to the test! screamed the posters for the Business Plan Competition organised by the Nanyang Technopreneurship Centre (NTC).

For Snazza – or Dev Ramnane, Prashant Goela, Nishith Prabhakar, and Romil Gupta – the call to innovate and strike out as entrepreneurs was too enticing to resist.

As it turned out, the foursome struck gold with their advergaming idea, deployed through interactive gaming technology on multiple platforms such as mobile phones or PDAs.

They beat 12 finalist teams selected from 60 teams of NTU students to the top prize. According to the trio, advergaming is a dynamic trackable form of advertising by companies.

So has Snazza survived the transition to the real world? Yes, the group started operations even before the competition wrapped up. Today, our four fresh computer engineering graduates run two IT firms as proud founders. iMfinity is the other company they started as students.

Faster entry, wider options for poly students

Final-year poly students can apply for university admission and start courses in July, just two months after graduating. NTU also expands options for poly students, offering new courses, more flexible choices, and exemption from industrial attachment

More polytechnic graduates are topping their class in university, reflecting the recent trend of good O Level students choosing the polytechnic route.

In fact, over the last five years, one in five NTU graduates who obtained First Class Honours came from a polytechnic.

To keep up with the changing demographics of top students, and to entice more good diploma holders to pursue degree courses locally, NTU will gradually increase its intake of good poly students.

NTU and the National University of Singapore (NUS) will also allow poly students to enter university sooner, cutting the wait by a year.

This group can now apply for admission to undergraduate courses when they are in their final semester, in late February, on the basis of five semesters of academic results. Successful applicants then start their studies in July/August.

Previously, poly students could apply only with their final results, released in June, three months after the NUS-NTU Joint Admission Exercise for polytechnic applicants ended.

There is no change to the admission criteria. Polytechnic applicants seeking a place in NTU in the next academic year (2004 – 2005) can apply online at www.ntu.edu.sg/oad/home/ from late February to mid-March 2004.

Choices galore at NTU

Poly students applying to NTU can also benefit from a slew of choices available from the next academic year.

They can, for example, choose from five new undergraduate courses – Chemical and Biomolecular Engineering, Computer Science, Economics, Bioengineering, and Environmental Engineering – on top of the existing nine.

In addition, more students will be considered for admission, as the list of diplomas considered “relevant” by the University is being expanded. Top poly graduates – those in the top 5% of their cohort – will have the freedom to apply for *any* course at NTU, even if their choice is unrelated to their diploma, provided they meet certain basic criteria.

And good news for those who do not meet the requirements for direct entry to the second year of an engineering course: they may be admitted to the first year. Those with two years’ relevant work experience can be exempted from industrial attachment to shave six months’ course time.



Remembering his roots: Dr Ong is grateful to Nantah

“I owe it all to Nantah,” says world figure in organic electronics research

“Standing at the old Nanyang Arch, I was so emotionally charged, I almost wanted to weep,” said Xerox Fellow and prolific inventor Dr Beng Ong.

“If not for Nantah, I would have had no education, because I did not have the qualifications to make it to a Malaysian university,” he said.

Born into a poor family in Penang, Dr Ong quit secondary school to work for a couple of years before pursuing higher studies. But without a form six certificate, he could not enrol in a Malaysian university.

Fortunately, there was the more enlightened Nanyang University (Nantah) in Singapore. He took Nantah’s entrance exam, passed, spent a harrowing year catching up, and topped his class every year. After graduating with a BSc degree in Chemistry in 1971, he went to Canada for further studies.

Blessed by the Nanyang Spirit

“Those four years at Nantah were the best years of my life,” he declared, thankful for the privileged times – a heady mix of student activities and intellectual stimulation, including private tussles with professors unused to his novel answers.

And yes, he revelled in the *Nanyang Spirit*, which he pointed out is definitely worth preserving at Yunnan Garden.

“This spirit is about helping one another. It was wonderful. Remember how Nanyang University was born? The Overseas Chinese pitched in with their own funds to build the University from scratch. I would like to see the new Nantah continue to offer places to less fortunate students.”

A star at Xerox

Dr Ong is a star at the Xerox Research Centre of Canada, and the main man behind Xerox’s recently announced breakthrough chemical toner technology. He was invited to NTU on 1 October to give a seminar, “Molecularly Engineered Materials for Plastic Transistors”, at the Photonics Research Centre. He has chalked up 115 US patents, and expects to collect another 30 patents, 20 of which are in organic or plastic electronics.

Raising the bar on e-education

Two new developments will ensure this. One's a link-up with a consortium of UK universities to advance graduate online education and research. Another is the setting up of a regional e-learning training centre to boost the e-learning capabilities of Southeast Asian universities

Working with UK e-Universities (UKeU), NTU will partner established UK universities to develop online courses for an international audience.

This is one of many activities NTU will pursue under an agreement with the consortium of UK universities. Other areas of collaboration include teaching, learning, and research.

Backed by the UK government with £62 million in funding, UKeU was set up to offer online e-learning courses. It works in partnership with 13 universities – including University of Cambridge, University of Oxford, and University of Leicester – to deliver their graduate courses online. The partner universities award the degrees, which are equivalent to those awarded for campus-based programmes. All UkeU courses are subject to rigorous quality control.

As equal partners, NTU and UKeU will enhance the twin pillars of teaching and research, starting with a focus on postgraduate studies and research in bioinformatics, in collaboration with

UKeU partner universities Manchester University and Leeds University.

NTU will also co-develop and co-brand course offerings with member universities, setting the stage for joint research and development.

Mutual benefits

Citing benefits of the partnership, NTU Deputy President Prof Cheong Hee Kiat said it would allow NTU students and working professionals to access UK university education, including professional development courses, at the click of a mouse. He added that NTU and UKeU would explore opportunities to design new e-learning technologies. UKeU Chairman Sir Anthony Cleaver said the collaboration with a top Asian university would enable the consortium to strengthen its brand name in Asia.

As a prelude to the MOU-signing on 6 August, a seminar on “The Future of Higher e-Education: The Global Perspective” was organised by NTU, UKeU, and the British Council at Raffles City Convention Centre. Prof Cheong

Hee Kiat gave a talk on NTU's robust *edveNTure* e-learning environment and its positive impact on learning. Sir Anthony Cleaver, who also delivered a speech, described the future of higher e-education which, he emphasised, should be driven by educational needs and not by technology.

Asia's e-learning base

In another boost for e-learning, NTU and US-based Blackboard International, a leading e-education software company, have agreed to launch a regional e-learning training centre at NTU.

As the first regional Blackboard Certified Education Centre outside the US, the centre will promote the development and adoption of advanced e-learning capabilities and practices in the regional institutions of higher learning.

The Centre for Educational Development (CED), which spearheads e-learning initiatives at NTU, will oversee the development of the facility, which is expected to reinforce NTU's – and Singapore's – role as a premier resource hub for e-learning in Southeast Asia.

Explaining why NTU was chosen to house the first Certified Education Centre in this part of the world, Mr Andrew Rosen, Executive Vice President of Corporate Development, Blackboard International, said that NTU had very experienced training staff, extremely high e-learning adoption rates, and a shared vision with Blackboard for an integrated e-campus.

The centre is expected to be operational in November 2003.

NTU – new e-training base for Asian universities: Prof Cheong Hee Kiat and Mr Andrew Rosen took questions after the MOU-signing on 25 August. Assoc Prof Daniel Tan, Director of CED, and Ms Mary MacPherson, Vice President of Marketing, Blackboard Inc, also participated in the Q&A session



US\$140,000 award for mobile learning project

NTU wins HP grant to deploy wireless technology developed by the School of Computer Engineering

Three critical ingredients for a truly mobile campus – instant communication, mobility, and low hardware cost.

Over the next 14 months, a team of computer engineering professors and 10 students will put this “right mix” into their development of wireless technology that will improve interactivity both inside and outside the classroom.

The team will exploit Wireless LAN, SMS, and Multimedia Messaging Service (MMS) technologies.

Their proposal received the nod from Hewlett-Packard (HP), which awarded NTU a US\$140,000 grant in August to develop and implement the technology. NTU is one of seven universities in the Asia-Pacific region to win the grant, and the only local university to do so.

When trials start in August 2004, computer engineering students will be able to send messages from their laptops or PDAs to their professors during lectures, providing instant feedback.

This means the professors can adapt their lectures in real time. Due to the

wireless learning environment, students off campus can not only attend such lectures remotely, but also “interact” with the class in real time.

NTU is a fully wireless campus. Over 90% of its courses are online. According to principal investigator Asst Prof Yow Kin Choong, the new system will add value by giving true mobility and real-time interaction between staff and students – a new dimension beyond “anytime anywhere” lectures, email communication, and discussion boards.



3D flight of fancy: Invited guests, donning goggles, enjoying virtual reality demos at the launch

Thinking and learning in 3D

NTU's \$5m Reality Theatre is the first of its kind in a Southeast Asian university. For researchers and students, it means whole new ways of exploring data

Imagine touring the Notre Dame to see priceless gothic heritage – without leaving campus. Or sitting in a BMW even before it is built, to “test” the latest ergonomic and lighting features. How about stepping inside a complex molecule to study it from all angles?

All this is now possible with the unveiling of a \$5m Reality Theatre on campus. Launched on 13 August by NTU and Silicon Graphics Inc, the 80-seat theatre at the Research TechnoPlaza provides an immersive 3D environment with active stereo capabilities for collaborative activities such as interactive engineering and design review, and data analysis.

Realistic simulation allows researchers to “visualise” solutions – anything from choosing the best design for a car to finding a cure for SARS. It saves time and money, as in many cases, expensive prototypes need no longer be built.

Worth a thousand words

“It is an honour to play a role in helping NTU reinforce its position as an innovator among Southeast Asian universities,” said Dr John Kan, Managing Director of SGI ASEAN. “If a picture can speak a thousand words, imagine the educational benefits students can reap from a 3D environment.”

At NTU, this 3D environment is made possible by a 16-processor SGI® Onyx® 3800 system, a 150-degree cylindrical screen measuring 2.6m high, and the Virtual Design 2 VR system.



Reality bites: At the launch, CAMTech Directors Assoc Prof Tony Chan and Dr Wolfgang Mueller-Wittig (above) showed the media what realistic simulations could achieve

The Reality Theatre, managed by the Centre for Advanced Media Technology (CAMTech), is open to all NTU schools for teaching and research. Government agencies and the industrial research community can also use the facility.

SGI is currently working with NTU to implement Southeast Asia's first Visual

Area Network in a university environment. This will enable our researchers to share large visual data sets with their peers on other continents in real time.

For more information, see www.camtech.ntu.edu.sg or contact the Virtual Reality group via email at vr@camtech.ntu.edu.sg

Not born yet, but at Nantah's opening

At the launch of the Reality Theatre, NTU President Prof Su Guanqing presented this interesting scenario – NTU students mingling with trishaw riders, unionists, and millionaires at the official opening of Nanyang University in 1958. “Digital virtual reality can be built to provide such unforgettable learning experiences of our heritage and cul-

ture,” he said. Besides being a dramatic teaching tool, virtual reality also offers unprecedented insights into R&D problems. This is because researchers can interact with 3D images in real time – useful in molecular modelling for drug discovery, medical diagnosis and treatment, and the creation of special effects or animation for film.

Best paper awards

Young faculty-scholars make their mark in academia on best paper honour rolls

Two young professors from the Nanyang Business School have won best paper awards for their outstanding research.

Asst Prof Violet Ho Tzu Wei, a PhD graduate of Carnegie Mellon University, won the "Best Paper based on a Dissertation" for her paper, "Evaluations of psychological contract fulfilment: a social networks perspective". The award came from the Organisational Behaviour Division of the Academy of Management.

"Psychological contract fulfilment refers to the individual's evaluation of how well the organisation has fulfilled its promises to him or her," said Asst Prof Ho. Her findings clearly show that "informal referents", such as co-

workers, affect the level of fulfilment perceived by employees.

Asst Prof Low Kin Yew took home the 2003 Outstanding Auditing Dissertation Award given by the Auditing Section of the American Accounting Association.

His thesis, *Coping with anticipated budgetary time constraints: auditors' industry specialisation and audit risk assessment*, completed at the University of Illinois at Urbana-Champaign, concludes that industry specialisation indeed helps auditors to conduct more effective and efficient audits.

A paper based on his dissertation has been accepted for publication in *The Accounting Review*.

Other best paper winners

Asst Prof Wayne Fu from the School of Communication and Information received the First Place Faculty Paper Award from the Media Management and Economics Division of the Association for Education in Journalism and Mass Communication – one of the most prestigious in the field of media economics.

Colleague Assoc Prof Alan Randolph Kluver obtained the Media Ecology Association's Walter Benjamin Award for Outstanding Article in the Field of Media Ecology for his paper, "The logic of new media in international affairs".

Also making their mark are computer engineering dons Assoc Prof Stephen John Turner and Assoc Prof Cai Wentong and their student, Chen Ji. They won the SIWzie Award at the 2003 European Simulation Interoperability Workshop for their paper, "A middleware approach to causal order delivery in distributed simulations".

Five science visionaries honoured

President Su accorded highest national recognition for his outstanding contributions to science and technology; a team from the School of Civil and Environmental Engineering (CEE) also awarded for pioneering wastewater treatment technologies



Gold medal for Prof Su Guanng, honoured for his exceptional contributions to the development of Singapore through the promotion and management of R&D

For his distinguished and sustained strategic contributions to science and technology in Singapore, NTU President Prof Su Guanng received the National Science and Technology Medal – the most prestigious National Science and Technology Award presented this year by the Agency for Science, Technology and Research (A*STAR).

In a 30-year career devoted to defence science and technology, Prof Su contributed directly to many key defence-related R&D projects, and was instrumental in setting up, developing, and running DSO and the Defence Science and Technology Agency (DSTA). He

also helped to chart national directions and policies for the development of science and technology.

"Professor Su's work has had a multiplier effect on national R&D activity and strengthened Singapore's R&D reputation internationally," said RADM (NS) Teo Chee Hean, Minister for Defence, singling out Prof Su's contributions in a speech he gave at the awards dinner on 25 September.

Bringing further glory to NTU was a four-man team from CEE who received the National Technology Award for their outstanding research and development of biogranulation technologies for high-performance biological wastewater treatment. Their novel techniques use specially cultivated bacteria to treat industrial wastewater from chemical plants and food processing companies.

The National Science and Technology Awards, presented annually by A*STAR, accord national recognition for significant science and technology contributions. Thirteen individuals were honoured this year.

Technology award for environmental engineering pioneers (from left) Prof Tay Joo Hwa, Assoc Prof Stephen Tay Tiong Lee, Asst Prof Show Kuan Yeow, and Asst Prof Liu Yu





Committed to their cause: (From left) Gary, Terence, Kenneth, Lit Hun, Don, Jack, Anand, and Dev

Community champions

Ten students start a caring movement on campus, pooling diverse strengths to launch a series of community projects that have earned them a place in the finals of a world competition

Organising entrepreneurship camps for teenagers. Administering financial games that nurture investment-savvy. Training special needs children to bake and sell pineapple tarts. All in a day's work for some NTU students.

So impressive were their efforts they won the Singapore leg of the Students In Free Enterprise (SIFE) competition, beating students from the National University of Singapore (NUS) and Singapore Management University (SMU).

SIFE is a global, non-profit organisation that offers teams of students the unique opportunity to make a moral difference in society.

Through educational outreach projects, SIFE teams teach important concepts – including market economics, entrepreneurship, and personal and financial success – to better themselves, their communities, and their countries.

The 10 students – seven from the Nanyang Business School and three from the School of Computer Engineering – championed six community projects.

Leading the pack were the team's primary engines, business student Amrita Vijay Kumar, a recent First Class Honours graduate, and accountancy students Jack Tan and Lee Lit

Hun. All were determined to start a SIFE umbrella organisation in NTU (www.sife.ntu.edu.sg).

They began rallying support for their cause, and roped in seven more members. In two months, they won over five projects from various student bodies, and even started a new project code-named "The Cookie Project".

This project, led by Lit Hun, involved training students with mild intellectual disability, from Delta Senior School, to bake pineapple tarts and sell them at NTUC FairPrice in Bukit Ho Swee. Besides getting the necessary approvals, Lit Hun and his team-mates even got Tan Tock Seng Hospital to assess the nutritional value of the tarts, so that they could present a more "professional" case to the supermarket.

From almost nothing, NTU SIFE delivered with six unique projects, compared to three or less from SMU and NUS. The students will be representing Singapore at the SIFE World Finals in Mainz, Germany, in October 2003.

For Jack, it was a belief in both the movement and his peers that spurred him on. "NTU has a diverse student population. We wanted to show that as students, we could turn this diversity into a strength by harnessing the best talent from the different schools."

National Day honours

We congratulate our colleagues who received National Day Awards from the President of Singapore for their invaluable contributions and service to the nation. They were among 3,166 grassroots leaders, civil servants, and community leaders honoured this year.

The Distinguished Service Order

Prof Cham Tao Soon, University Distinguished Professor, President's Office

The Public Service Star

Mr Lim Boon Kiat, Secretary, Kaki Bukit CCC (Senior Assistant Director, Student Affairs Office)

The Public Administration Medal (Silver)

Mr Sim Cheng Tee, Divisional Director, Corporate Planning and Development, NIE

The Public Administration Medal (Bronze)

Miss Seow Bee Lay, Deputy Director, Office of Finance; Assoc Prof Cheah Horn Mun, Dean, Foundation Programmes, NIE

The Commendation Medal

Mr Tan Hock Guan, Assistant Director, Office of Finance; Mrs Jacklyn Ko, Head, Human Resource, NIE

The Efficiency Medal

Mdm Aminah Bte Abas, Senior Clerical Officer (Special Grade), MPE; Mr Foo Shiang Kim, Laboratory Manager, CEE

The Long Service Medal

Mrs Chan-Chua Lee Kiang, Senior Technical Executive, Science and Technology Education, NIE



As recipient of the Distinguished Service Order, **Prof Cham Tao Soon** received the top National Day Award conferred by the President of Singapore. Prof Cham led the founding of Nanyang Technological Institute (NTI) in 1981. NTI was later reconstituted, in 1991, as Nanyang Technological University, incorporating the National Institute of Education. During his 21-year tenure as President, Prof Cham made indelible contributions to engineering and professional education, building what has become one of the finest technological universities in Asia.



Above: Guys get flowers, too! **Below:** A splendid occasion to ponder the road ahead



Top graduates with Mr S R Nathan, President of Singapore and Chancellor of NTU, and Mrs Nathan at the Convocation Dinner

On the path to greatness

Humanities and the Sciences “will allow our undergraduates to fly in the turbulent weather of today,” says President Su

A record 5,411 graduates received their degree scrolls from 8 to 12 September in the Nanyang

Auditorium. Of these, 1,257 were higher degree graduates.

The University's 12th Convocation was a landmark event for another reason: Prof Su Guanqing gave his first convocation address as President of NTU.

Speaking at the first of 10 ceremonies, he encouraged the graduates to press on in these bad times. “The job environment is difficult today, but it is not going to stay this way forever. With perseverance and the spirit of self-help, I am sure you will overcome... and thrive.”

He also touched on NTU's expansion plans, revealing that by the end of the decade, NTU could be awarding 8,000 degrees a year, in subjects ranging from engineering to the humanities.

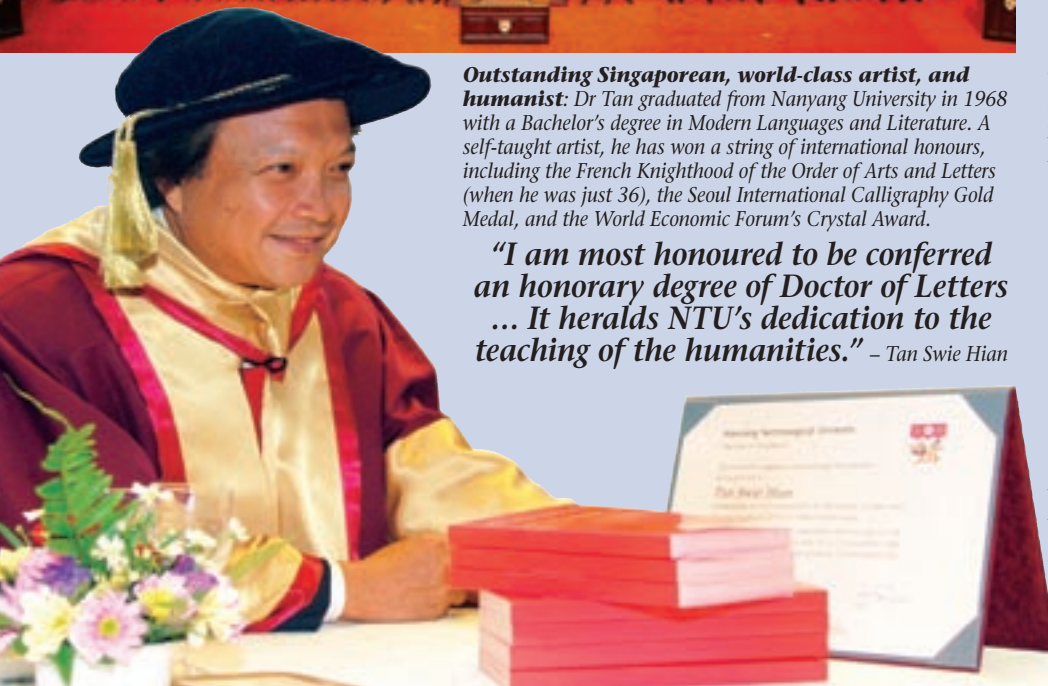
Third chapter

Of the Class of 2003, almost 60% of Bachelor graduates come from the College of Engineering. The School of Electrical and Electronic Engineering alone produced 1,008 graduates.

Prof Su said the third chapter of Yunnan Garden would witness the morphing of NTU into a comprehensive university. “Our model is no longer just MIT, but also Harvard and Yale.”

He singled out the establishing of the School of Humanities and Social Sciences and the School of Physical Sciences (by 2005) as being the most important developments in this chapter.

Referring to NTU's Honorary Graduate, he said: “Our distinguished alumnus Tan Swie Hian has always emphasised the importance of Humanities and the Sciences in providing a complete education. These two wings will allow our undergraduates to fly in the turbulent weather of today.”

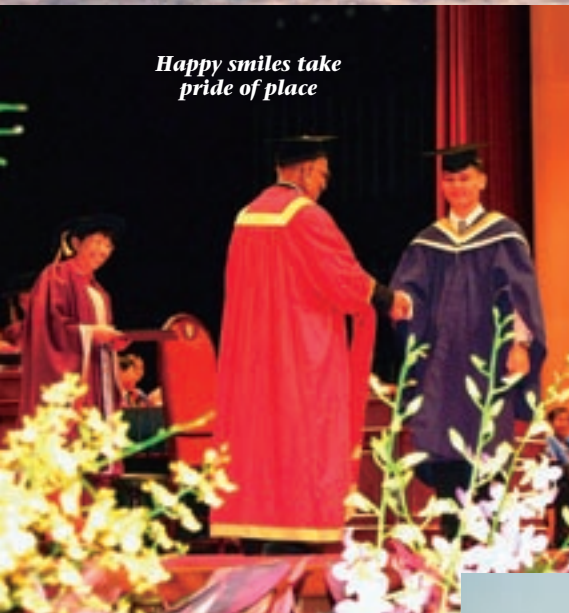


Outstanding Singaporean, world-class artist, and humanist: Dr Tan graduated from Nanyang University in 1968 with a Bachelor's degree in Modern Languages and Literature. A self-taught artist, he has won a string of international honours, including the French Knighthood of the Order of Arts and Letters (when he was just 36), the Seoul International Calligraphy Gold Medal, and the World Economic Forum's Crystal Award.

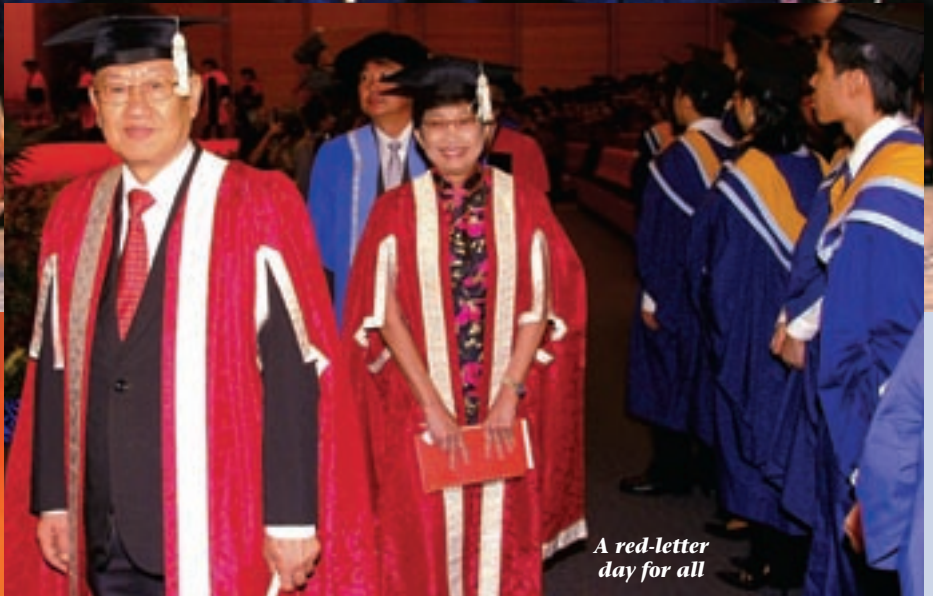
“I am most honoured to be conferred an honorary degree of Doctor of Letters ... It heralds NTU's dedication to the teaching of the humanities.” – Tan Swie Hian



No holding back the joy



Happy smiles take pride of place



A red-letter day for all

Class of 2003



On the stairway to success



Our professors, with us at every turn

They're tops in more wa

Each has a different story to tell, but all have made something of their lives, whether graduating top of the class or pursuing meaningful activities beyond books and exams



Spirit of can-do and lifelong learning: Mdm Kartini with sons (from left) Syafiq, Sufi, and Saliheen

From homemaker to leading light

Mdm Kartini Bte Anwar, 42, is the oldest among the inaugural batch of BA (Ed) graduates with a Malay Language and Literature specialisation.

And she could well be the wisest, too, having topped her class with a Second Upper Honours degree.

Being a full-time housewife for 14 years – with three boys to show for it – was no deterrent to going back to school, which she did in 1999 when she decided to train to be a teacher.

Armed with an NIE diploma (DipEd in Malay Language and Literature), she taught for two years, then decided to pursue the BA degree programme at NIE.

The transition from homemaker to teacher came almost by chance. “As a housewife, I used to be a parent-volunteer at my son’s school and at the Association for Muslim Professionals, where I manned a help line. I also did story-telling at Bedok Library. I soon realised my potential with young children, and thought I should engage myself further in this area and give something back to society.”

Her sons were a great help

As her husband often travelled overseas for business, her three sons became her anchor when she hit the books, helping out with the housework, even teaching her IT skills. They also proved valuable guinea pigs for testing her lesson plans.

Mdm Kartini feels age is no barrier to learning. “Maturity is an added advantage because you are more settled. You have less things to worry about.”

And she still craves self-improvement, eyeing a part-time Master’s degree in Classical Malay Literature and perhaps even a PhD degree down the road.

Now shaping lives at Bendemeer Secondary School, she is continuing the circle of inspiration she feels privileged to have been a part of.

“In Brunei, most of my neighbours were European and old, but still studying,” she said, describing life in Brunei, her home for five years after marriage. “I’m also inspired by my NIE lecturer, Dr Haji Abbas Bin Mohamed Shariff, who got his PhD when he was in his 50s.”

Comeback kid on path less trodden

Lee Beng Hong, MAS Gold Medal winner, was almost “dumped” in the Normal Stream in a neighbourhood school, because he fared badly in his Primary School Leaving Examinations (PSLE).

Sixteen years later, he is at the top of his Master of Science (Financial Engineering) class, beating his cohort of 23 students from nine countries, among them graduates of prestigious universities like Oxford University and Imperial College.

“It is a leap of faith to forego the comfortable training you’ve been so familiar with, to take on something that’s alien and new. It takes a lot of self-motivation in order to switch over successfully,” said Beng Hong, 28, who quit his first job as a civil engineer after just 11 months on the job, as he found it “too conservative”.



Beng Hong makes the leap

The MSc (Financial Engineering) course offered by the Nanyang Business School proved to be the right fit for him – intensive and challenging, integrating all the latest techniques and concepts in finance, mathematics, and computer science.

Beng Hong is now in London under the Global Trainee Programme of Deutsche Bank, as a management associate. He will return to serve at Deutsche Bank in Singapore.

He looks forward to the excitement of working in the trading room. And watching the market switch positions every few minutes.

“Two brains better than one!”



Double First: Accountancy graduates Sin Li and Eng Kiat have reaped the benefits of studying together. The sibling-pair graduated with First Class Honours, bringing double joy to the Loh household. “We did our final-year project on Employee Stock Options together, and unlike other groups, we did not have to circumvent problems such as logistics and relationship norming. We could meet anytime and question each other’s ideas without worrying about offending,” said Sin Li, now a financial analyst with SingTel. Eng Kiat, a tax associate at PricewaterhouseCoopers, is of like mind, but admits there was some pressure to catch up with his younger sister in terms of academic results.

ays than one

A conscious choice to engage youth

Driven by a strong desire to help alienated and displaced teenagers, Jolene Hwee, Jared Tham, and Willy Ong got together after their final-year examinations to form "The Choice Initiative".

This is a Non-Government Organisation in the making, a product of a higher "calling", as described by Willy, a Nanyang Business School graduate.

Its mission – to empower youths to explore choices in everyday issues, using the medium of community theatre in schools as a start.

And it's not mere rhetoric. The trio have been digging deep into the psyche of today's teenagers through focus group meetings, personal interviews, and workshops.

The idea for the Initiative was sparked off by a Singapore International Foundation (SIF) youth expedition trip to Bangalore in June this year.

"We were so inspired by the success of using forum theatre to tackle social issues like child labour that we decided to do something similar in Singapore," said Jared, who studied at the School of Communication and Information, with Jolene.

In forum theatre, members of the audience participate actively in the performance and are encouraged to address issues and change "outcomes".

The graduates, two of whom are in full-time jobs, aim to stage their first performance in November, and by 2004 present a photo exhibition on youths around the world.

A world of possibilities to explore

But would the younger generation really benefit from something like "The Choice Initiative"?

Jared is acutely aware that many Singaporean youths feel trapped by seemingly fixed routes in life. "They do not see the choices available before them, that there is a world of possibilities for them to explore."

All three are willing to devote their attention full-time to the Initiative if their concept takes off.

"I deliberately chose to freelance, because to me, having the time to pursue interests such as The Choice Initiative is more important than money," said Jared.

The trip that started it all: Jolene (top row, second from left), who obtained First Class Honours, and Willy (front row, first from left), with their groupmates, many of whom will be involved in one way or another in The Choice Initiative. Jared is behind the camera



Brains and heart: Marcos gave weekly lessons to his peers. The seven medals and prizes he collected is testimony of his outstanding achievements

Teachers' dream, students' pet

Marcos – that's his full name – is surprisingly humble for someone who has garnered a string of academic awards – seven to be precise, including the Lee Kuan Yew Gold Medal and ExxonMobil Gold Medal.

He is also at the top of the entire cohort of mechanical and production engineering graduates – the best accolade any student can receive.

What's amazing about Marcos, who's from Indonesia, is not just his ability to fathom the intricacies of microfluidics, his pet subject, but his genuine interest in the welfare of his peers.

From his second year of study, he gave free lessons to his classmates, helping them make sense of tough subjects such as Thermodynamics, Mechanics of Deformable Solids, and Fluids Engineering. Marcos also gave one-on-one tutoring.

"It gives me a certain satisfaction when I can clear their doubts or make them understand certain concepts," he said.

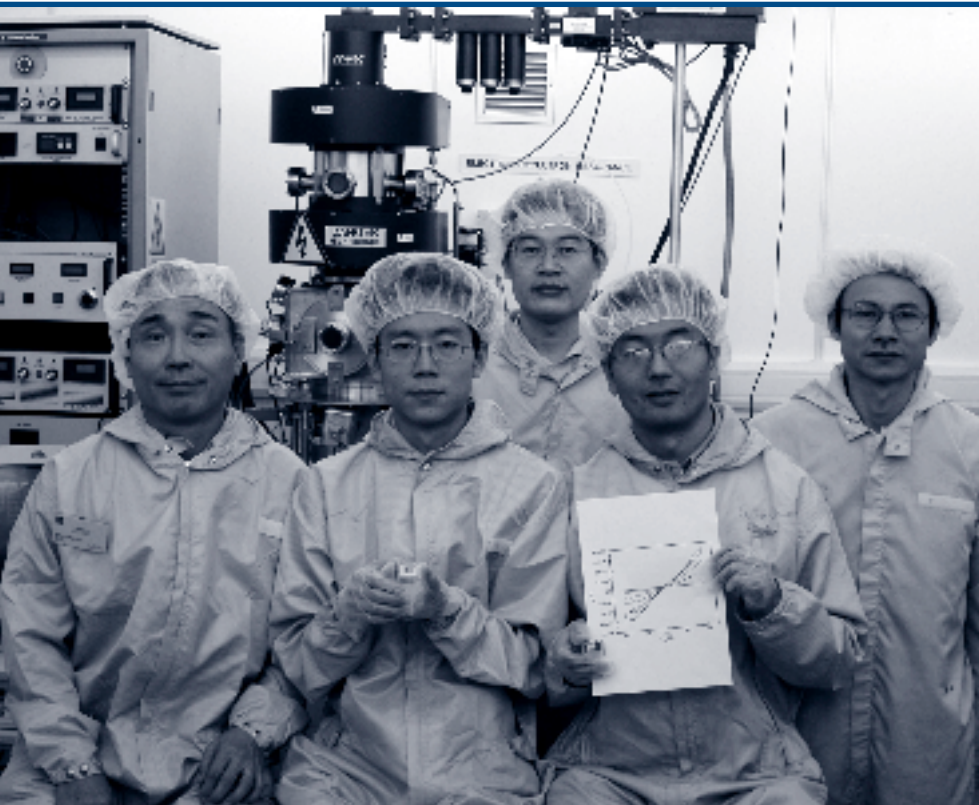
Lessons, which sometimes attracted groups as large as 20, were held weekly in a tutorial room for up to two hours. Marcos would start with a small lecture, then progress to a question-and-answer session. Everyone learnt in the lively, friendly environment, unencumbered by the pressure to perform. Some went on to make the grade with flying colours.

In between his studies and tutoring, Marcos found time to manage the Hall 10 choir for two years, and even co-founded an a cappella group that made it to the finals of a national a cappella competition.

Marcos has now moved to the Graduate Hall, a sign that higher studies have begun.

He is pursuing a Master's course in microfluidics, a branch of physics and biotechnology that studies the behaviour of fluids at the micro level. And no, he has not given up tutoring, which is still a weekly affair.





Carbon edging out silicon? As demonstrated by (from left) Assoc Prof Jeashin Ahn, Yang Dajiang, Li Jingqi, Asst Prof Zhang Qing and Dr Wang Sigen, transistors in microchips can be made smaller by using carbon nanotubes in place of silicon

A first with transistors made of carbon

NTU has fabricated Singapore's first carbon nanotube-based transistor, and efforts here to leverage this miniaturised technology look set to intensify

Supremely small – that's the beauty of carbon nanotube-based transistors such as the one developed by an NTU team.

Transistors, important building blocks of integrated circuits, or chips, are the brains of computers. They are usually made of silicon.

There has been growing interest in carbon nanotubes as the basis of next-generation transistors. These super-thin molecules have special properties, and are cheaper and easier to fabricate.

Dr Zhang Qing and his team from the Microelectronics Centre, School of Electrical and Electronic Engineering, are the brains behind Singapore's first high-performance carbon nanotube-based field effect transistor (CNTFET), also the first molecular electronic device in Singapore.

Molecular electronic devices, inherently smaller than their silicon counterparts, have been touted as the next generation of electronic devices. The cross-section area of a carbon nanotube-based transistor is 500 times smaller than that of a silicon-based one!

Although many research groups

worldwide are studying CNTFETs, only a few have been able to prepare the technology, said Dr Zhang.

"Successful fabrication of CNTFETs in our lab means we have the capability to do research relevant to molecular electronic devices and device physics."

Carbon nanotubes, seamlessly rolled-up graphene sheets of carbon, have a typical diameter of 1 to 3 nm, which is 10,000 times smaller than that of human hair. They have extremely high thermal conductivity, chemical stability, and tensile strength in comparison with commonly used metal semiconductors.

The NTU team is now studying how their CNTFET performs under different chemical and biological environments. They aim to develop new carbon nanotube-based devices, such as CNT biosensors that can detect glucose in diabetic patients.

Thrilled about the possibilities of the technology, Dr Zhang said: "Imagine a biosensor so tiny and sensitive that it can detect chemical changes in your body, or even sniff out a biochemical attack in the environment way before it hits you!"

Would you like a foldable TV?

Improvements in organic light-emitting diodes, the technology behind next-generation flat screens, could bring us closer to this reality

Carry your TV with you, yet enjoy the experience of size. This is possible if foldable TVs come our way, thanks to promising progress in OLED technology by NTU researchers.

The key to this new reality involves using organic light-emitting diodes (OLEDs), also known as "glowing plastics", to replace the conventional liquid-crystal or plasma of flat panel displays.

Unlike liquid-crystal displays, which are made of glass, OLEDs are made from an organic polymer (plastic) material which is not only very thin but extremely durable and flexible. Being paper-thin, they can be used to create foldable flat screens. They also generate very bright and rich colours. OLEDs have

many uses.

Imagine an interactive "painting" on the wall that doubles up as sleek wall lights!

In an OLED, an active layer of organic



New and improved: OLED displays that consume less power

material is sandwiched between two electrodes. When an electric current passes through the organic layer, light is emitted with a colour that depends on the particular material used.

Before this promising technology can be commercialised, some major problems have to be solved, one of which is the high turn-on voltage of OLEDs.

Working with a multidisciplinary team at NTU, Dr Ashraf Uddin from the School of Materials Engineering and his PhD student, Lee Chea Beng, successfully tackled this problem.

They inserted a thin layer of alkali metal between the active and cathode layers of the organic material in the OLED, and chemically treated and modified the anode layer. The result: increased electron injection from the electrodes, which has reduced the turn-on voltage of OLEDs from 20V to 4V, giving brighter and sharper images at lower power consumption.



Is photography a mountain to climb? No, it's a journey to be enjoyed, says Mr Kwek

Shoot straight from the heart

And enjoy the process, advises Mr Kwek Leng Joo, President of the Singapore Chinese Chamber of Commerce and Industry. During a photography talk, "Beyond Images", he shared his insights and life philosophy gained through years behind the lens

As Managing Director of City Developments Ltd, Mr Kwek Leng Joo is a busy man, but never too busy for his life's passion – photography.

It was a hobby he picked up when he was 11 or 12, he told an audience of undergraduates, junior college students, and staff in LT 4, during a talk on photography he gave upon the invitation of the NTU Photo-Videographic Society.

Photography, he said, brought him into the fascinating world of nature, people, and living things, besides giving him a deeper understanding of himself. "Beautiful pictures come as a bonus," he said. "More importantly, photography is a life-long learning process." The pursuit of an art never ends, and one's satisfaction is derived from the images, he said. To take meaningful pictures, a peaceful

heart is needed. Mr Kwek urged shutterbugs to look through the lens with their hearts, not only with their eyes.

A good photographer, he said, could convey a message through his images. He then drew an analogy between photography and growing up, before presenting photos from his personal collection.

These were evocative images – the awe-inspiring snow-capped mountains of

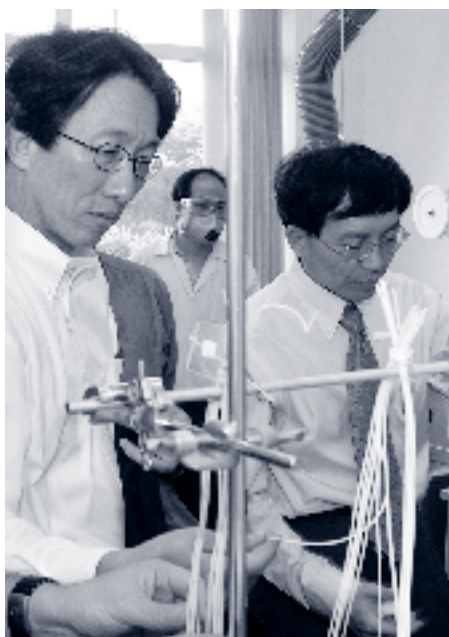
Yun Nan, the carefree joys of childhood in rural China, and closer to home, the wonders of nature at the botanic gardens and zoo.

The presentation was followed by a question-and-answer session, chaired by Prof Tommy Koh, Ambassador-at-Large. Responding to a question, Mr Kwek said that photography not only greatly enriched his life but also changed his values over the years. While people often expected good results from photography trips, he said it was actually more important to enjoy the process.

The event, held on 22 August, was attended by several distinguished guests, including Mr Tharman Shanmugaratnam, Acting Minister for Education, Mr Abdullah Tarmugi, Speaker of Parliament, and Prof Su Guaning, President of NTU.



In their element: Mr Kwek and Ambassador Koh taking questions from photography enthusiasts



Hands-on experience with hollow fibres: Minister Lim (left) and Mr Teo Ming Kian at the Advanced Membrane Technology Centre

Minister Lim on "home ground"

It was a meeting of minds on 22 September, when Environment Minister Lim Swee Say and his entourage toured the Institute of Environmental Science and Engineering (IESE)

With the Minister for the Environment was Economic Development Board (EDB) Chairman Mr Teo Ming Kian and senior officials from the Ministry of the Environment, National Environment Agency, Public Utilities Board, and EDB. Said Prof Tay Joo Hwa, Director of IESE: "The visit gave us the opportunity to showcase our research capabilities and update the delegation on the active role IESE plays in promoting the development of market-leading technologies."

IESE, hosted by NTU, aims to make Singapore a regional Environmental Technology (ET) hub through its vision of becoming a world-class centre for envi-

ronmental science and technology. The size of the Asian ET market (excluding Japan) is expected to be worth US\$62 billion by 2010.

The Institute is organised into four Research Centres – Clean Energy, Membrane Technology, Biotechnology and Ecomaterials – with affiliation from NTU's Environmental Engineering Research Centre and Maritime Research Centre under the School of Civil and Environmental Engineering.

In the last two years, IESE has successfully filed 12 patents for inventions and gained recognition for its work in biotechnology and novel hydrogen applications.



A new kind of fuzzy neural network is proposed by (centre) Assoc Prof Er, now director of a new research centre for intelligent systems, Dr Wu (left), and Dr Gao

Leap in artificial intelligence

Assoc Prof Er Meng Joo from the School of Electrical and Electronic Engineering has co-authored a new book, *Dynamic Fuzzy Neural Networks: Architectures, Algorithms and Applications*, with Dr Wu Shiqian, a research scientist from the Institute for Infocomm Research, and Dr Gao Yang, Singapore Millennium Research Fellow.

Published by McGraw Hill, it is a culmination of their research on intelligent control and soft computing methodologies. A critique of current artificial intelligent systems – fuzzy logic, neural

networks, and fuzzy neural networks – is followed by a riveting scientific account of a new type of fuzzy neural system termed *Dynamic Fuzzy Neural Networks*.

The architectures and novel algorithms of this system are presented, along with examples of its applications in robot manipulators, drug delivery, breast cancer classification, face recognition, and rules extraction, among others. The authors conclude with comparative studies that demonstrate the superiority of their proposed methodologies over existing methods.

Cyberworlds A to Z!

Discover new worlds on the Web at the 2003 International Conference on CYBERWORLDS, organised by the School of Computer Engineering in cooperation with IEEE Computer Society, ACM SIGGRAPH (Singapore), and Eurographics.

The conference, to be held from 3 to 5 December 2003 at Marina Mandarin Hotel, will feature 65 paper presentations and keynote talks by eminent researchers such as visual computing pioneer Prof Toshiyasu L Kunii, Prof Daniel Thalmann, a trailblazer in virtual humans, and Prof

Michael Zyda, a pioneer in the field of networked virtual environments.

Topics to be covered during the paper, tutorial, and industrial presentation sessions include distributed simulation and distributed virtual environments, geometric modelling and visualisation for cyberworlds, cyberworld security, intelligent agents, cyberbusiness, cyber-learning, and cybermuseums.

The conference offers discounted registration rates for students and industrial participants. See www.ntu.edu.sg/sce/cw2003 for details.

Recent visitors

During the period July to September 2003, the University received the following distinguished visitors:

- 17 Jul** Prof Dr Tran Luan Kim, Rector and Vice-Chairman of the Founding Board, Vietnam International University
- 25 Jul** Prof Radhakrishnan, Vice Chancellor, Vellore Institute of Technology, India
- 28 Jul** Prof Christopher Edwards, Vice Chancellor, University of Newcastle upon Tyne, UK
- 8 Aug** Mr Chan Soo Sen, Minister of State for Education and Community Development and Sports; LG (NS) Lim Chuan Poh, Second Permanent Secretary for Education
- 27 Aug** Prof Wolfgang A Herrmann, President, Technical University of Munich, Germany
- 28 Aug** Dr Gertrud Humily, Executive Director, International Education at the Department of Defense, and Executive Director, Global Education for European Engineers and Entrepreneurs; Dr Thomas C Rozzel, President of the International Board, Global Education for European Engineers and Entrepreneurs, France

During this period, the University also received visiting delegations from Shandong Province, PRC; Kasetsart University and Office of the AUN Secretariat, Thailand; Narotama University, Indonesia; and Nanyang University alumni associations in Malaysia.

Alliances with two universities

NTU will increase academic and research activities with the University of Tokyo, the oldest and most prestigious national university in Japan.

This arises from a five-year agreement on academic exchange and a memorandum on student exchange signed between our College of Engineering and the School of Engineering at the University of Tokyo.

NTU has also renewed a successful academic partnership with Germany's Technical University of Munich, first launched in 1997. The scope of collaboration has been broadened to include sponsorship of co-operative seminars, workshops, and other scientific meetings on matters of mutual interest, and nurturing of joint-venture start-ups.

In addition, both universities will participate in the exchange programme, Links to Asia by Organising Traineeship and Student Exchange (LAOTSE).

What's up at the Lodge?

Something catches the eyes of these NTU Council members, leaving the President's Lodge after an appreciation dinner for outgoing members. Pre-dinner cocktails were held in the lush gardens of the Lodge. Since the flowers there were not for picking, the outgoing Council members carted home beautiful batik orchid paintings instead. The paintings by renowned batik artist Sarkasi Said were appreciation gifts from the University and Council.





Warming up to a healthier weight: NTU President Prof Su Guanng (centre) shows the way

A-rousing interest in healthy living

NTU has received its 4th Silver HEALTH Award, given by the Health Promotion Board to organisations with commendable workplace health promotion programmes. At NTU, a healthy lifestyle committee puts staff on the path to wellness through educational and fitness initiatives, including:

- Health Bits, a weekly email bulletin
- Health and wellness talks
- Exercise support groups, such as running groups
- A wellness Q&A column in the staff newsletter
- A healthy lifestyle website
- Fitness assessments
- Sports competitions
- Subsidised health screening (basic to comprehensive plans)
- A path-finder guide (this online pictorial guide traces walking/jogging routes on campus)

New Appointments

President's Office: Prof Koh Tai Ann, Dean of Students

School of Humanities and Social Sciences (being established): Prof Eddie Kuo Chen-Yu, Interim Dean

School of Mechanical and Production Engineering: Assoc Prof Bryan Ngoi Kok Ann, Assistant Director (Strategic Research), Office of Director of Research

School of Communication and Information: Assoc Prof Schubert Foo Shou Boon, Vice-Dean; Asst Prof Lee Wai Peng, Sub-Dean; Assoc Prof Abdus Sattar Chaudhry, Head, Division of Information Studies

Environmental Engineering Research Centre: Assoc Prof Stephen Tay Tiong Lee (CEE), Deputy Director

Maritime Research Centre: Assoc Prof Ang Hock Eng, Deputy Director

Office of Admissions: Assoc Prof Simon Yu Ching Man, Vice Dean of Admissions

Nanyang Technopreneurship Centre: Assoc Prof Seet Lip Chai, Deputy Director

Assoc Prof Koh Thiam Seng, on secondment to the Ministry of Education (MOE), has been appointed Director, Educational Technology Division, MOE.

Full Professors

We congratulate our colleagues who have been promoted to full professors.

Alex Kot Chichung, EEE

Zhu Weiguang, EEE

Schubert Foo Shou Boon, SCI

Khoo Li Pheng, MPE

Gan Leong Huat, Natural Sciences, NIE

Goh Kim Chuan, Foundation

Programmes, NIE

Doctorate award for Prof Leo Tan

Loughborough University has conferred an Honorary Degree of Doctor of Science on Prof Leo Tan, Director of NIE, who received the award for his distinguished contributions to education and science.

Exercising their options to health

NTU ACTIVE Day is just one of many health-promoting activities on campus

Friday, 5th September was a first of sorts. Prof Su Guanng presided over the ACTIVE Day event at NTU as guest-of-honour for the first time, and the inaugural President's Challenge Run was also launched, with the challenge trophy sponsored by Prof Su himself.

The slogan adopted for this year's National Healthy Lifestyle Campaign was "Healthy Weight, Make It Happen!". And making it happen was what ACTIVE Day at NTU was about.

After encouraging staff to be more health-conscious and active, Prof Su flagged off the President's Challenge Run. Fifty-one staff members gamely took up the challenge of a 4.2km run on campus, with a team from NIE turning their lead into eventual victory.

Meanwhile, the stadium field was transformed into a giant line-dance site with more than 400 staff assembled. A 30-minute drill was all it took to turn them into mass line-dancing pros.

Re-appointments

National Institute of Education: Prof Leo Tan Wee Hin, Director

School of Communication and Information: Assoc Prof Hao Xiaoming, Vice-Dean and Head, Division of Journalism and Publishing; Prof Ngan King Ngi (SCE), Assistant Director of Research; Prof Soh Chee Kiong (CEE), Assistant Director of Research

Office of Director of Research: Assoc Prof Khor Khiam Aik (MPE), Assistant Director of Research; Prof Ngan King Ngi (SCE), Assistant Director of Research; Prof Soh Chee Kiong (CEE), Assistant Director of Research

Nanyang Technopreneurship Centre: Assoc Prof Tan Teng Kee, Director

Centre for Advanced Numerical Engineering Simulations: Prof Liew Kim Meow (MPE), Director; Prof Fan Sau Cheong (CEE), Deputy Director; Assoc Prof Wang Lipo (EEE), Deputy Director



Floating gems: 100 lanterns were released into Nanyang Lake – 40 by the organisers and another 60 made by staff, students, and their children, some on the spot with coaching from student helpers. Several lanterns were tied to fishing lines and anchored to prevent them from drifting to the edge of the lake

Moonlight sonata

She was an ethereal beauty, adorned with scarlet lamps and floating lanterns, during the Mid-Autumn Festival celebrations on campus



Traditional welcome for the Guest-of-Honour, Mr Chan Soo Sen, Minister of State for Education and Community Development and Sports

Revellers at Yunnan Garden: Students, staff, and alumni with families in tow, lapping up the festive atmosphere

The Nanyang Lake had her day on 5 September, basking in her radiant glow from 100 *kong ming deng* (floating lanterns).

She was a sight for sore eyes, and the big attraction of the Traditional Chinese Lantern Festival, attended by an estimated 3,000 people.

The event, organised for the first time by the NTU Students' Union, the Chinese Society, and the Cultural Activities Club, was set against the backdrop of the Chinese Heritage Centre and Yunnan Garden. It had something for everyone, from cultural performances, festive goodies, and traditional games and riddles, to lantern-making and an exhibition on the legends of the festival.

Said Soh Phey Hong, Vice Chairman of the organising committee: "The objective of celebrating this festival with all races was achieved, as many foreign students and staff and their families turned up that night."



Having a ball: The little ones, like Assoc Prof Lim Ee Peng's child, happily occupy themselves while their parents chat with friends