NTU President Dr Su Guaning is looking forward to the Class of 2004 “joining and energising our alumni”.

At the first of 11 convocation ceremonies on 12 July, he also congratulated them for their achievements and invited them to help NTU realise its vision as a Global University of Excellence.

The university has been progressing well. Already, students are scrambling for places at NTU.

The latest admissions exercise drew a larger intake and more quality applicants, he said.

Compared with last year, 38% more top A Level students and an astounding 146% more top polytechnic students were admitted to NTU.

Dr Su noted “a number of outstanding leaders” among this entering class.

What makes NTU the preferred choice? Among the compelling factors are the university’s differentiated programmes – and the major steps it has been taking to become a strong comprehensive university on par with the National University of Singapore.

“Our three new schools are being established on a high quality level with a compelling value proposition for each new student,” said Dr Su.

Bi-cultural elite

Elaborating, he noted that the Division of Chinese was now actively developing the bi-cultural elite spoken of by Senior Minister Lee Kuan Yew.

“A powerful combination is a double major in Business and Chinese to produce graduates expected to be in great demand from multinational corporations operating in China.”

Bi-cultural and tri-cultural elites are also being groomed through the Global Immersion Programme, launched on 1 July. The first 200 students will be sent to China and the US.

As early as next year, students can look forward to a seamless system of core curriculum and specialisation subjects, majors and minors throughout the schools.

Realising its student-centric vision, NTU has established a one-stop Student Services Centre, an International House, a Student Counselling Centre, and a Student Hub – all clustered within the campus nerve centre. Student entrepreneurs have even taken over the running of a canteen.

On the global front, extensive research collaborations and dual or joint Master’s degree programmes with top universities like MIT, Stanford, and Caltech “attest to the standing which NTU has in the eyes of the international academic community,” said Dr Su.

A comprehensive university

With three first-rate schools being added to its existing eight schools, NTU is right on track to becoming a comprehensive university of international repute.

The School of Humanities & Social Sciences has already accepted its first
intake of students, while the School of Physical Sciences and School of Art, Design & Media will matriculate students next July.

Dr Su noted that one outstanding feature of top universities is the strong spirit and the passion of their alumni, benefactors, and the entire university community.

“Public or private, the very best universities develop a virtuous cycle that continuously enhances their quality and reputation,” he said.

“Students participate in a life-changing experience and education at the university. They support the university throughout their careers. They serve on the Board of Trustees and become major donors. This resource enhances the educational experience of the future graduates. Thus the cycle continues."

Aspiring to be “a university of the very top rank”, NTU would be working hard to establish this virtuous cycle, he added.

**Convocation vignettes**

**His Excellency Mr S R Nathan, NTU Chancellor and President of Singapore, presided at the first convocation ceremony.** In attendance were several ministers and senior officials, including Dr Tony Tan, Deputy Prime Minister and Co-ordinating Minister for Security & Defence, and Mr Shanmuganathan, Education Minister.

**A record 5,426 graduands received their degree scrolls** from 12 to 17 July in the Nanyang Auditorium. Of these, 1,189 were higher degree graduands.

**For the first time, the Chairman and members of the NTU Council joined the Chancellor and Pro-Chancellors in presenting degrees. Council Chairman Mr Koh Boon Hwee is pictured here.**

**Mr Wee Cho Yaw, the new Pro-Chancellor, hands it out**

On 14 July, prominent banker Mr Wee Cho Yaw, Chairman and CEO of the United Overseas Bank Group, took a break from work to hand out degrees to 108 Master's degree graduands. Mr Wee, 75, was appointed Pro-Chancellor of NTU in April this year. Sharing his feelings about his new appointment, which came into effect in June, he said: “I am delighted to be re-associated with the new Nantah, that is, NTU, which is being developed into a global university of excellence.” Mr Wee was the Chairman of the Council of the former Nanyang University from 1970 to 1980.
Fair advantage

Husband-and-wife team Lee Tuck Wai and Chan Hui Ching have a lot in common – a deep love for the environment, similar occupations, and identical first degrees. On 12 July, their similarities grew when they each received a Master of Science degree in Environmental Science & Engineering as pioneer graduates of the Singapore-Stanford Partnership (SSP) programme.

The newlyweds, both environmental engineering specialists – he at CH2M HILL and she at CPG Consultants – jumped at the chance to join the one-year SSP programme when it was launched regionally last year.

Run by NTU’s School of Civil & Environmental Engineering and Stanford University’s Department of Civil & Environmental Engineering, it had “two very positive pulls,” recalls Tuck Wai, “a highly regarded Stanford education and sponsored course fees.”

Indeed, the programme launched with a three-month study stint at Stanford University. Back in Singapore, classes were conducted simultaneously with students from Stanford through video-conferencing. Stanford faculty also came to teach at NTU. Although the US segment of the programme proved to be the most demanding, “the learning environment and infrastructure was just fantastic,” says Tuck Wai.

He values most the “solid conceptual knowledge” he has gained, and would recommend the course to “anyone who has a real interest or passion in environmental issues or engineering.”

Incidentally, Tuck Wai topped his class of 18, a feat he credits to his wife.

“She was my study partner, my motivator, my pace-setter and very often my project partner also. She’s simply the greatest partner in the world, in more than one sense of the word.”

It was fantastic, says Tuck Wai of the Singapore-Stanford Partnership experience, which he shared with his wife, Hui Ching.

No jam today

Hoping to beat the jam today? Just whip out your mobile phone, select the expressway you want to check, pick a camera location, and click “view”.

What started out as a final-year project for Liu Hui, fresh Bachelor of Engineering (Computer Engineering) graduate, has turned into a commercial application that will be pre-installed on all new Motorola I830 mobile phones.

The 23-year-old took an idea from the Sub-Dean of her school, Asst Prof Yow Kim Choong, and set out to give road users live traffic information over hand-held devices.

Liu Hui explains: “The Land Transport Authority’s website provides comprehensive real-time traffic information. However, people can only check the information if they have a computer and Internet connection. I wanted to give commuters the flexibility to check traffic information from anywhere at any time.”

So she developed a new wireless service using J2ME technology that puts the information onto Java-enabled mobile phones.

Her system also includes a server that grabs live traffic images off the Land Transport Authority’s website, processes them, and transfers them to mobile phones on request.

“We figured out a way to reduce the size of the image without compromising too much on quality, so that it can be transferred to the phone very quickly,” she says.

First class? Not that easy!

A girl vomits onto a boy. Another drinks fluorescent pink ink and regurgitates pink. Two lads run into each other and one is sent home with a bleeding nose.

Dealing with emergencies like these the first few days on the job prompts newly minted teacher Muhamad Zaki Bin Jalil to say philosophically: “NIE has empowered me with all the theory. But real wisdom, I guess, matures with time and experience.”

The Bachelor of Arts (Education) graduate made history when he became the first student from NIE’s Humanities & Social Studies Education programme to be awarded First Class Honours at this year’s Convocation.

He insists he did it by spending enough time away from his textbooks – on a host of “extra-curricular activities”.

“I strongly believe in the fact that the world is my classroom,” states the nature activist, social commentator, and civic volunteer, who actively pursued his passions while studying at NIE.

As the President of the NIE Green Club, he started the first butterfly garden on campus last year.

Off campus, he helped in the activities of the Nature Society (Singapore) and conducted tours at Pulau Ubin as a volunteer nature guide – activities he keeps up.

Running the Training and Development Committee of Darul Arqam Singapore also helped him hone his administrative and leadership skills.

A volunteer nature guide at Tanjung Chek Jawa, Zaki helps others to appreciate the unspilt beauty of Pulau Ubin. Here he shows a child the Knobby Sea Star
To be in the top three...

... in Asia, and comparable to the best in Europe and USA – that’s what the Nanyang Business School (NBS), Singapore’s largest business school, is aiming for, says its new Dean, Prof Hong Hai

Prof Hong Hai is ahead of his time. Even as he has his hands full reshaping the school’s management structure, he is toying with the idea of setting up a small clinic at NTU “for those who seek TCM therapy”.

A certified TCM practitioner, Prof Hong practices at a free clinic – The Public Free Clinic – in Tampines one evening a week.

Laughing, the new Dean of NBS says: “Of course, all this would be done in my spare time and would not encroach on time spent on my NTU duties.”

Lest you worry, Prof Hong has a firm grip on the competition heating up among business schools here, and is prepping NBS – Singapore’s largest business school – for the long haul.

He elaborates: “With our large faculty of over 180, we are in a position to offer a wider variety of expertise and a richer range of courses than other business schools in Singapore.”

The school’s Asian focus is another core strength. “Our programmes offer this special advantage that a European-focused school like INSEAD or an American-oriented programme like Chicago’s may not be able to provide,” explains the former Dean of Graduate Programmes at NBS.

“Our joint executive MBA programme with Shanghai Jiao Tong University attracts the country’s elite, including CEOs of major Chinese corporations,” adds Prof Hong, who has served on the faculty of the renowned Kellogg Graduate School of Management in the US.

Responding to the needs of the public sector, NBS recently launched another high-level Master’s programme in Public Administration for senior government officials.

The school’s undergraduate business and accountancy programmes have also turned out outstanding students who have in the past year won top prizes in at least three prestigious global competitions.

If his predecessor, Prof Neo Boon Siong, ably took NBS to new heights, helping it become the first business school in Singapore to be accredited by the esteemed European Foundation for Management Development, Prof Hong, who took over the deanship on 1 July this year, is bent on assuring the school’s global reputation keeps rising.

He plans to run NBS like a business enterprise, familiar territory given his extensive corporate experience, including being the President and CEO of public-listed Haw Par Corporation Ltd from 1997 to 2003.

The management team has already been reorganised into “strategic business units” run by three Vice-Deans who report to an Executive Vice-Dean in charge of degree programmes.

“NBS is already ranked among the top three business schools in ASEAN and among the top 10 in Asia,” notes Prof Hong. “Our goal is to be among the top three in Asia and comparable to the best schools in Europe and USA.”

NBS gets international quality label

It is the first business school in Singapore and only the fifth in Asia to be accredited by EQUIS, the leading European accreditor of business schools

The Nanyang Business School (NBS) has received the prestigious EQUIS quality label for its top-quality programmes, faculty, graduates, and international outlook and presence.

The only business school in Singapore and the fifth in Asia to achieve this accreditation, it is now among 73 EQUIS-recognised business and management schools worldwide.

EQUIS (the European Quality Improvement System), run by the European Foundation for Management Development (efmd), is Europe’s leading accreditor of management and business schools.

The EQUIS quality label is expected to enhance the global mobility of NBS graduates, as it signals the school’s leading position in management education to the international academic and business communities.

IESE accrediting “greens”

Partnership with US agency establishes NTU as first regional test centre for environmental technologies

The Institute of Environmental Science & Engineering (IESE) at NTU has scored a coup by being the first institute outside the United States to be recognised by the US Environmental Protection Agency (USEPA) as a test centre for green technologies.

Technologies assessed by IESE will be recognised by USEPA as credible after an audit. Such verification of market-ready technologies will help potential buyers and permit-granting authorities to make informed decisions about the technology they are buying or permitting.

Accredited technologies also move more quickly across markets.

IESE will begin by accrediting ballast water treatment technologies, wastewater treatment technologies, and air pollution control technologies.

To facilitate the development of new testing protocols and to share expertise, NTU formalised a partnership with USEPA on Environmental Technology Verification (ETV) on 20 May. A Letter of Intent was signed by NTU President Dr Su Guaning and US Ambassador to Singapore Mr Franklin Lavin.

Besides being a ringing endorsement of IESE’s domain expertise, the partnership with USEPA has made NTU a key ally in the relatively new field of environmental technology testing. It will establish Singapore as a regional provider of testing and accreditation services in green technology.

Mr Lim Swee Say, Singapore’s Minister for the Environment, who witnessed the signing at the Raffles Town Club, said the concept of an independent verification programme was relevant and applicable to the region. The NTU-USEPA platform, he added, would nurture “the growth of a vibrant testing and accreditation cluster in our industry”.

Prof Hong Hai giving his first convocation address as Dean of the Nanyang Business School on 15 July
Fast track to an NTU degree

Four more junior colleges (JCs) have joined an NTU scheme that allows JC students to take undergraduate courses and earn advanced placement credits

Temasek Junior College (TJC), Victoria Junior College (VJC), Raffles Junior College (RJC), and National Junior College (NJC) have joined an NTU programme that not only nurtures talented JC students, but also puts them on the fast track when they enrol at NTU.

The scheme was first launched in July 2003 with Hwa Chong Junior College. Each JC can send 50 students to NTU to take up to two subjects – including biology, chemistry, computer science, mathematics, materials science, and physics – over a six-month semester during which they attend lectures and tutorials, do assignments and take exams.

The courses they complete will earn them credits that will count towards an NTU degree. Those who perform well in school and on this programme may even be considered for direct admission to NTU later on.

The advanced credits earned would make it possible for bright students to graduate with a Bachelor's and a Master's degree in four years, or to take double majors, said NTU President Dr Su Guanping at the signing of a Memorandum of Understanding with the four JCs on 25 June.

Those with a flair for research can opt to pursue projects individually or in teams under the guidance of NTU professors. As a start, up to 20 projects will be offered to each JC.

The scheme is free and targets students in the final two years of the Integrated Programme (IP), a recent initiative launched by some top JCs to enable bright students to skip the O Levels and go straight to the A Levels or the International Baccalaureate.

JC teachers benefit too, as NTU will invite them to undertake research projects with professors and to participate in workshops and seminars to enhance their knowledge.

For example, the Chinese Division at the School of Humanities & Social Sciences will work with TJC teachers on research in Chinese language and culture – an area of mutual interest and strength.

NTU will also share its life sciences expertise with VJC and NJC, and its computing expertise with VJC. Drawing on its multidisciplinary expertise, it will help RJC design and equip four research laboratories, including a photonics laboratory, an energy laboratory, and a life sciences laboratory.

Buildings that save the earth!

The new Centre for Green Building Technologies (CBGT) is making homes and offices more environmentally friendly

To protect the earth, we can outfit buildings with green technologies that are kinder on the environment.

That’s exactly what the new Centre for Green Building Technologies (CBGT) at NTU is setting out to do – through R&D and the application of novel technologies for energy efficient and environmentally friendly buildings.

The centre, a collaboration between the School of Mechanical & Production Engineering (MPE) and the College of Environmental and Energy Engineering of Beijing University of Technology (BJUT), has already made an impact in NTU by substantially improving chiller plant operating efficiency on campus.

Energy-efficient technologies developed and tested at the North Spine and NIE chiller plants were found to reduce electricity consumption by as much as 47% and 38%.

“As green building technologies must work in an actual building environment, we’ve been using actual offices and complexes as our laboratory,” said MPE’s Assoc Prof Tay Seow Nge, who started the virtual school-based centre.

The College of Environmental and Energy Engineering is one of China’s biggest research institutes in the field of building energy and environment. It is actively engaged in ground source heat pump applications for residential and commercial buildings, and is designing its own flagship “green” building.

To benefit more homes and companies, CBGT is commercialising a state-of-the-art photo-catalytic technology that improves indoor air quality. It is also negotiating with local building facility service companies to jointly offer energy management services to commercial buildings in Singapore.

A recent coup is helping local company HydroBall Technics (SEA) Pte Ltd win a TEC (The Enterprise Challenge) grant from the Prime Minister’s Office for the testing of a new automatic cleaning system for water-cooled condensers at JTC and NTU chillers plants.

Contact Assoc Prof Tay (msntay@ntu.edu.sg; 6790-5593) for more information.
Shaping Omani higher education

Prof Chew Soon Beng has joined an international team tasked to remake the higher education sector in Oman

When the government of Oman approached Singapore’s Ministry of Foreign Affairs for a high-level consultant to participate in its remaking higher education project, the plum job fell to Prof Chew Soon Beng, a Professor of Economics at the School of Humanities & Social Sciences.

Prof Chew is the only non-Muslim Asian in the 10-member committee which includes high-level consultants from the US, UK, Canada, Australia, Malaysia, and Tunisia.

“The country is very progressive,” said Prof Chew, whose nine-month appointment will see him making four trips to Oman and one trip to UNESCO in Paris. “Many top civil servants are women. Quite a few civil servants have PhDs from leading universities in the US, UK, and Australia.”

In Oman, an Arab country with close to three million people, higher education is free. But free education may not be sustainable in the long run due to the country’s increasing population and depleting oil reserves. At the same time, the country is keen to give all Omanis a chance to excel academically and professionally.

“One of the main aims of the international team is to recommend policies to reshape the higher education sector to improve the quality of students and to increase access to higher education with a smaller budget,” said Prof Chew.

Introducing revenue-generating executive programmes, he said, was one way for the country’s local university and tertiary institutes to reduce their financial dependence on the government.

Prof Chew has been instrumental in launching and developing the Nanyang Business School’s Chinese and English executive programmes. In 1998, he started a Master’s programme in Managerial Economics, which continues to attract top-level executives and mayors from China. He is also a Consultant to the International Labour Organisation, World Bank, Asian Productivity Organisation, and other industrial organisations.

Grooming world-class marketers

Nanyang Business School (NBS) students have been taking top spots in prestigious global competitions like the L’Oréal Marketing Awards

Kreative Kalloni – clinched Gold last year

Three NBS students did Singapore proud by beating 23 international teams to emerge first runner-up at the L’Oréal Marketing Award 2004 in Paris on 9 June.

This is the second time an NTU team has won in this high-profile global marketing competition. Last year, an all-female trio, also from NBS, clinched the Global Champion award, beating 17 other countries to help Asia bring home the award for the first time in 10 years.

In this year’s global showdown, final-year marketing students Willi Ching, Pang Wee Han and Chan Zi Sheng – collectively known as the Metropolitan Elite Team (MET) – faced tough competition from established universities like Waseda University, University of Michigan, Beijing University, Monash University, Esade (Spain), and Yonsei University.

Their impressive branding strategy for SOLUTIONS – a unique range of customisable and easy-to-use skincare products – won them 5,000 Euro dollars, a dream tour to three Asian cities of their choice, and job offers as Management Trainees with L’Oréal Singapore.

In April, the students had to contend with tough competition at the L’Oréal Marketing Award 2004 Singapore finals, where they triumphed over 68 teams from NTU, the National University of Singapore, and Singapore Management University.

Willi, spokesperson for the NTU team and ex-President of the Accountancy and Business Club, said the training he received at NBS stood his team in good stead. “The New Undergraduate Experience prepared us well by giving us global exposure within a total learning environment,” he explained.

Metropolitan Elite Team – ranked within top two this year
中华语言文化中心成立十周年纪念

2004年6月23日，为庆祝南大中华语言文化中心成立十周年而举办的“国家疆界与文化图像国际研讨会”于南洋大礼堂由资政李光耀先生鸣锣揭幕，在1100名出席者的祝福下，成功举行，于6月25日圆满闭幕。

李资政的开幕演说，强调培养双语双文化人才为要务，也鼓励中心继续培养中文人才。中心主席暨筹委会主席李元瑾副教授致辞时也指出中心在10年前的创设是“有远见，有勇气的构想和举措”，今后将更努力使南大中华语言文化中心成为本地区研究中华语言文化的重镇。

随后两天的会议，先后由大会主席演讲，国立大学李光耀教授、北大陆岳明教授和伦敦大学欧麦教授的精彩演讲开场。来自两岸四地、新加坡、马来西亚、印尼、新西兰、澳洲、英国、美国28个城市共160余位专家学者聚集一堂，就语言、文化、文学、历史等领域热烈讨论。促成深入的学术交流，做出美丽的学术火花。南大能办成如此规模的中文会议，令人振奋。

这是南大首次举办人文与社会科学会议，是南大成为综合性大学的重要里程碑。会议的论文，全部用中文发表，意义深远。南大很荣幸能邀请到许多著名学者与会，这肯定进一步提高了南大中文地位以及人文研究的水平。本会议亦吸引更多公众到场聆听，是南大普及学术的体现。

本次会议由周清海教授发起，中华语言文化中心主办，国立教育学院中文系及人文与社会科学学院中文系联办，并获李氏基金会、陈振球基金、佛教居士林大力赞助。

南洋理工大学于1994年设立中华语言文化中心。第一任主任，周清海教授于1994-2003年在任期间，致力于推动语言、文学、文化、历史等方面的研究，并办学报和为南大学生开办中文课程。为中国在南大发展，奠下基础。2003年9月，中心并入新成立的人文与社会科学学院，由李元瑾副教授接棒。

Thank you,
Mr Pro-Chancellor…

… for nine years of distinguished service

The University, represented by the Chancellor, Pro-Chancellors, Council members, President, and Deputy Presidents, hosted a dinner at the Shangri-La Hotel on 10 May to honour and thank retiring Pro-Chancellor Mr Tang I-Fang.

Singapore’s President, Mr S R Nathan, the Chancellor of NTU, and Mrs Nathan were the Guests-of-Honour at the dinner, which was held in the Shangri-La’s State Room.

Honouring Mr Tang in a speech, NTU President Dr Su Guaning said: “As Pro-Chancellor since 1995, he has presided over countless Convocation ceremonies and served as an exemplary role model for our students.”

Besides congratulating thousands of graduates, Mr Tang, the Executive Chairman of WBL Corporation Ltd, always found time to attend NTU functions despite his busy schedule.

Our deepest gratitude: The Chancellor of NTU, President S R Nathan, joining NTU in thanking Mr Tang I-Fang
The School of Biological Sciences (SBS) has a grand new home and has consolidated its expertise, including 62 research laboratories, under one roof; it also doubles as a new student hub

If there is one thing SBS Dean Prof James Tam loves most about his new school building, it is how “open, free, and friendly” the place is. The new SBS building sits on Nanyang Drive next to the campus nerve centre. It is a functional building with two wings and ten floors of modern teaching and research facilities, including four video-linked teaching labs that are the largest in NTU.

SBS will also be the site of a new student hub. A Student Activities Centre is being constructed in the basement of the south wing. This hip hangout, to be operational by December, will boast a host of student services, including a shop and cafeteria. Students can also meet and mingle at the landscaped plaza linking the school to the Nanyang Auditorium and North Spine.

Across the road from the school’s main entrance is a well-equipped animal housing facility – connected to the main complex by an underground tunnel – for studies on transgenic animals.

**Popular flagship BSc course**

SBS launched its flagship Bachelor of Science (Biological Sciences) degree programme in July 2002 – as well as Master’s and PhD programmes by research – to produce talent for the life sciences industry, earmarked as the fourth pillar of Singapore’s national economy.

Its curriculum is benchmarked against top biology schools like the Massachusetts Institute of Technology and UCLA (the University of California, Los Angeles).

Because of the strong demand for places, the school doubled its undergraduate intake this year, adding 200 students to its current enrolment of nearly 300, of which 20% are foreign students.

“Word has gone round that we are offering an excellent undergraduate course with a broad-based curriculum taught by an international faculty with a passion for teaching and solid research track records,” said Prof Tam, whose growing faculty, currently numbering 30, includes expertise from over 12 countries.

Polytechnic graduates with relevant diplomas and excellent results are offered direct entry into the second year. “In the latest admissions exercise, we received many applications from polytechnic graduates who were among the top 5% of their cohort,” said Prof KC Lun, Vice-Dean (Academic) at SBS.

**Focus on disease and ageing**

With the completion of the new building, the school’s 62 research laboratories – which make up the BioSciences Research Centre – have now been re-housed under one roof.

The work at these labs focus on two key themes – the origination and development of diseases (pathogenesis), particularly infectious diseases, and ageing, including cancer and chronic diseases associated with ageing.

HIV, SARS, dengue fever, influenza, rotavirus, hepatitis, malaria, bacteria, and fungi are some of the infectious
Light waves detect the TB bacteria in sputum. This method is not only faster but also up to ten times cheaper than current screening methods

A new handheld test kit for tuberculosis (TB) will make testing for the pathogenic bacteria faster and as easy as ABC.

Invented by a team from the School of Mechanical & Production Engineering (MPE), in collaboration with researchers from the Singapore General Hospital, the device uses light waves to detect the TB bacteria in samples of sputum from patients.

This method is estimated to be ten times cheaper than the conventional method of growing sputum culture in the lab, and also gives results in days, instead of the usual six to eight weeks.

All of this, coupled with the device’s ease of use and accuracy, are the reasons why project leader Assoc Prof Daniel Lim Chu-Sing (left in picture) hopes it will greatly benefit Third World countries, where 95% of TB cases occur.

The team’s technique works very quickly because the photons in light waves are sensitive enough to “pick out” the biological indicators of TB, present only in trace amounts.

Graduate engineering students Yip Pak Chiang and Aneira Pariwono helped Assoc Prof Lim in the research and to finetune the technique. The product of their work is a lightweight, portable device that has been successfully tested in initial clinical trials. Several biomedical companies have shown interest in helping to commercialise the invention.

Assoc Prof Lim, who is trained in engineering and microbiology, said: “Throughout the research and development of this project over the last one and a half years, we were motivated by the hope of inventing a TB detection device that would become widely used and hence would lower TB incidence rates worldwide.”

TB, caused by the bacterium Mycobacterium tuberculosis, infects mainly the lungs, although it can affect other organs as well. The disease was one of the most dreaded afflictions of the 19th century.

Early detection of TB could mean the difference between life and death. Unfortunately, TB is difficult to detect because it is slow-growing and can be masked by other diseases such as HIV and AIDS.

According to a 2003 World Health Organisation report, there were 8.8 million new cases of TB in 2002. Every day, some 5,000 people worldwide die from the disease.

Next up: Double degree in Biomedical Sciences and TCM

NTU and Beijing University of Chinese Medicine (BUCM), one of the oldest and most established TCM universities in China, are actively exploring an initial agreement to offer a five-year double degree undergraduate programme.

Students on this programme, targeted for launch in July 2005, will spend the first three years at the School of Biological Sciences and their fourth and fifth years at BUCM to graduate with both a Bachelor of Science (Biomedical Sciences) degree from NTU and a Bachelor of Chinese Medicine degree from BUCM.

The bilingual honours programme marries modern biology – including biological sciences, epidemiology, anatomy and pharmacology – with the principles of Traditional Chinese Medicine (TCM).

The TCM component forms one-third of the programme to be taught at NTU by BUCM professors in Chinese.

“This course will advance the practice of TCM in Singapore,” said SBS Vice-Dean Prof KC Lun. “The beauty of it is that graduates will be certified TCM practitioners who can choose to work in the biosciences field if they decide not to practise TCM.”
Stents that self-destruct (after healing)

Welcome to the future – stents that not only completely dissolve on their own in the human body but also release drugs to heal

Revolutionising the face of biomedicine, researchers at the School of Materials Engineering (SME) have produced what is probably the world’s first completely biodegradable drug-eluting polymer stent.

Stents are slender tubes inserted inside blood vessels to unclog them and keep them open. They are often used to address blockages in the coronary arteries, the urethra, and bronchial tubes.

Unlike traditional metal stents, which are permanent, the NTU polymer stent vanishes after a few months – because it has been programmed to do so. This reduces the risk of infection from bio-incompatibility, which arises when foreign objects remain in the body for too long.

Another novel feature of the NTU stent is its multiple layers that can release up to 20 different drugs at varying rates to simultaneously prevent blood clotting and vessel re-closure.

This is revolutionary because it means the stents can be tailor-made with different drugs for patients.

The new-generation stent was developed over two and a half years by Prof Freddy Boey, the Acting Dean of SME, and Assoc Prof Subbu Venkatraman. Thirteen other staff members and students from SME were also involved in the ground-breaking project.

Incredible advantages

One major problem with present-day metal stents is that they can injure the wall tissues when they have outlived their usefulness, usually after three to six months. Such injuries stimulate cell growth at the site, causing a narrowing of the blood vessels and eventual re-closure, often with fatal consequences.

Metal stents, including partially biodegradable ones made of metal and polymer, have another limitation – they cannot carry more than one anti-clotting drug. This is a problem because a daily dose of several drugs is needed to treat the problem of bio-incompatibility.

Hence, metal stents are sometimes removed. However, this can inconvenience patients and, more dangerously, expose them to post-surgery infection.

The NTU stent, made of PLA and PLGA polymers, offers clear advantages as it is both biodegradable and multiple drug-eluting. After three to six months, the stent breaks down into lactic acid, which is absorbed by the body.

Many applications

The invention has sparked a flurry of interest among members of the medical community – all keen to exploit its potential in new revolutionary treatments.

For example, the SME team has been working with Assoc Prof Chia Sing Joo, Head of the Department of General Surgery and Urology at Tan Tock Seng Hospital (TTSH), to adapt the stent for urological applications.

People with cancer of the bladder or cervix, or who have had kidney stones removed, need a stent in the urethra for a length of time to prevent interior blockage.

Conventional metal stents, apart from being permanent implants, tend to get lodged easily because urine flow in the urethra is irregular, unlike the flow of blood, which is continuous.

Two animal trials so far have shown that the stent disappears completely after the expected length of time and does not cause any adverse effects, such as inflammation or blockage. The stent is now being adapted for use in the bile duct and prostate gland.

Amazing micro-pumps!

In future, accident patients with excess fluids in their heads could have these life-threatening clots safely removed with the help of a friction-less micro-pump co-invented by a team from the School of Materials Engineering (SME).

The life-saving friction-less micro-pump, believed to be a world first, is so small that it can be inserted into fine capillaries. It is used to pump blood to or away from a site, to solve problems like blood-starvation or severe fluid retention in the body.

The key people behind the innovation are Prof Freddy Boey and Assoc Prof Ma Jan from SME, and Prof Mory Gharib, who heads the Bioengineering Department at the California Institute of Technology (Caltech).

The team married a Caltech-patented design for a pump with no moving parts and NTU’s patented technology for a highly efficient and lightweight piezoelectric micro-pump.

A unique feature of the pump is that it can simultaneously act as a stent, preventing vessels from narrowing and boosting blood flow in the body. It can even discharge drugs to tackle blood-clotting problems as well as manage pain.

Great commercial interest

The NTU team is in the midst of forming a company to better realise the commercial value of their invention in partnership with commercial manufacturers.

Already, one of the world’s biggest heart-stent manufacturers has signed an agreement with the team to use the stents for coronary applications. The market for coronary stents in the US alone is worth at least $5 billion annually.

Another four biomedical manufacturers are keen to commercialise the biodegradable ureteric stent, while one US biomedical company is eager to manufacture the bronchial stent.

It may be another three to five years before we see the stents being used in hospitals, following the completion of extensive clinical trials.

Nevertheless, Prof Boey is thrilled that his multidisciplinary team at SME has been able to make great biomedical strides forward.

“We are proud that this new generation multiple drug-eluting biodegradable stent was developed entirely at NTU,” he said, adding that he is thankful to his project team for making the invention a reality. “They provided the passion and drive to create an innovation that I believe will enhance the quality of many people’s lives.”
Perfect 360-degree vision?

Tick Boon makes it happen with a device that turns conventional cameras into robotic “eyes” with no blind spots

While interning at Germany’s renowned Fraunhofer Institute for Production and Automation, Loh Tick Boon, 25, then a final-year Mechanical & Production Engineering student, was issued a challenge – to improve the visual system of the institute’s mobile robot.

He promptly delivered with a device – the 3-in-1 Prism Lens – that gives 360-degree vision in real time with no blind spots. Conventional methods cannot produce panoramic images in real time because they rely on multiple cameras and rotating parts and mirrors to produce the images.

Tick Boon used a single lens and camera to solve this time-lag problem. “Because the images are produced in real time, the 3-in-1 Prism Lens is ideal for robotic navigation,” he said.

For example, it could be fitted into unmanned vehicles as a robotic “eye” to detect soldiers in enemy territory. It could also be used in vehicles to guide navigation in hostile environments, such as underground mines.

A European patent has been filed for the invention, which won Tick Boon the Silver Award for Defence Science at the 2004 Tan Kah Kee Young Inventors’ Award, held earlier this year.

He is the first person to receive the award since it was launched under the umbrella of the Tan Kah Kee Young Inventors’ Award in 2001 by the Tan Kah Kee Foundation and the Defence Science & Technology Agency.

Watch your pulse!

This “hyper-sensitive” wristwatch is no ordinary watch

Are you a ticking time bomb?

The MediWatch can tell you whether your heart is at risk

Hypertensives who manage to lower their blood pressure with drugs may not be out of the woods yet. A team from the School of Mechanical & Production Engineering (MPE) and local company Healthstats (HS) has found that lowered blood pressure (BP) readings may not necessarily correlate with improved heart health.

After studying the arterial pulse waveform characteristics of a few hundred patients, the team discovered a new index of cardiovascular health, independent of blood pressure, which they have called the “Systolic Gradient Index”, or SGI. The SGI measures the efficiency of the heart’s pumping and the resistance it “fights” against.

Better yet, the team, led by Assoc Prof Yeo Joon Hock from MPE and Dr Ting Choon Meng from HS, have developed a patented device called the MediWatch that captures a person’s SGI from the radial artery at the wrist in seconds. As the device also provides BP and pulse rate readings, doctors can use it to identify “latent” or potential hypertensives – patients with normal BP who are at risk of heart failure because their SGI is in the danger zone.

The MediWatch is a world first in being able to capture both macroscopic and microscopic arterial pulse waveforms around the clock. It behaves as a 24-hour Ambulatory BP Monitor (ABPM) for home or clinic use, and is an ideal alternative to inflexible cuff-based ABPMs currently in use.

The handy watch can also be used to replace the very invasive intra-arterial lines in hospital ICUs and operating theatres.

Our Euro champs

Three researchers scored a goal in France by winning the Best Project prize in the Photonics Innovation Village competition at Photonics Europe 2004.

Prof Soh Yeng Chai from the School of Electrical & Electronic Engineering (EEE), his PhD student, Mr Wang Qijie, and Dr Zhang Ying from the Singapore Institute of Manufacturing Technology (SIMTech) showcased a Three-Port All-Fibre Optical Interleaver used in optical-fibre-based communication and measurement systems, that was judged the best of 17 projects from France, Germany, USA, Singapore, Italy, Belgium, Poland, Ireland, and Finland.

The competition was organised by SPIE (The International Society for Optical Engineering) and was held in conjunction with Photonics Europe to support and publicise cutting-edge photonics technologies developed at universities, non-profit institutions, and research centres from around the world.

EEE-SIMTech project bags first prize at Photonics Europe 2004

After making it into the top 17, it was a happy “strike” for (from left) Mr Wang, Dr Zhang, and Prof Soh in Strasbourg, France
They’re a hit

So how did they win their students’ hearts?

Being knowledgeable in your subject gives you an edge, but it also pays to be dedicated, sincere, humorous, passionate, caring, patient, and endearing – qualities that clearly swung the votes in favour of the eleven who took home the 2004 NTU-NIE Excellence in Teaching Award.

Indeed, tops with students are professors who make abstract concepts seem so simple, who inspire in their own special way, who genuinely care.

Gary Goh and his peers had high praise for one such professor – Asst Prof Valerie Low. “She simply provides the most wonderful teaching experience. She is always filled with so much zest and enthusiasm, always so eager to clarify our doubts,” he said.

“It may be her laughter which she freely gives or it may be that she makes business law so easy to understand. Everything just falls into place with her explanations,” he added.

Anubhuti Gupta wasn’t surprised her favourite lecturer, Assoc Prof Ashraf Mohamed Hefny, won the award, as he has a quality that teachers ought to have but rarely do, she observed. “He makes studying a pleasure, and he does so very effortlessly.”

According to Anubhuti, statics, a branch of mechanics, used to send shivers down her spine. But under Assoc Prof Ashraf’s guidance, she ended up helping others who had difficulties with the subject.

A cheerful teacher always gets the thumbs up from NIE trainee teacher Elyani Mohamed. That’s why she gave her PGDE lecturer, Asst Prof Abbas Mohd Shariff, her vote.

“He is a very endearing teacher, and always exudes that aura of joy and happiness that makes everyone feel very relaxed in class,” she said, adding that his “vast knowledge” also impressed her.

Lenny Chudri could not ask for a more dedicated teacher than Assoc Prof Rusli and is glad that NTU makes it a point to honour excellent teachers like her professor.

She shared: “He is in my opinion one of the very few dedicated teachers in our school. I can see his love for teaching and his great passion to share his knowledge with his students.”

When art meets technology...

NTU welcomed 250 creative experts and academics from over 23 countries at a joint conference on computer graphics and virtual reality held on campus from 15 to 18 June.

Both conferences – the International Conference on Computer Graphics and Interactive Techniques for Australasia and Southeast Asia (Graphite) and International Conference on Virtual Reality Continuum and its Applications in Industry (VRCAI) – were sponsored by ACM SIGGRAPH, the world’s largest and most influential society for computer graphics, and organised by SEAGRAPH, the Computer Graphics Association for Southeast Asia.

NTU’s School of Mechanical and Production Engineering (MPE) and School of Computer Engineering led the organising efforts.

The delegates discussed the changing face of digital art and virtual reality, technologies most visible in a host of blockbuster movies that bring the physically impossible onto our screens, realistically and convincingly.

But as Graphite 2004 Chairman Assoc Prof Lee Yong Tsui from MPE pointed out, this fusing of art with technology is for more than making movies.

This was evident with the delegates sharing ideas on topics ranging from modelling facial expressions for games and entertainment to visualising proteins in drug design.

The conference was replete with other crowd-pullers showcasing some of the most advanced animation and graphics from around the world. For example, there was a digital art gallery, a 3D animation show, an emerging technology exhibition, and a computer animation theatre, open to the public.
JC students talk business

After participating in an entrepreneurship boot camp organised by our alumni, they strike a business deal with the camp's organisers

Forty-four junior college students started the mid-year break by going into business. Although their experience lasted all of three days – from 1 to 3 June – it left them with deep impressions about what could make or break a business.

For example, through rigorous business simulation, a key component of the camp, the students – from Hwa Chong Junior College, National Junior College, Temasek Junior College, and Victoria Junior College – learnt how to grow a start-up in a challenging environment. They also picked up business tips from experienced “serial entrepreneurs”.

Participant Tan Wen Hao said the boot camp made him realise how a company’s decisions affected its future. Called the Innovation & Enterprise Boot Camp, the experience was engineered by alumni of NTU’s flagship graduate diploma Technopreneurship & Innovation Programme (TIP).

Roderick Chia, who conceived the camp, pointed out that teamwork, decision-making, and negotiation skills were some of the business essentials imparted.

He had help from fellow camp facilitator and TIP alumnus Lee Kah Howe.

Both alumni are their own bosses. While Roderick runs Spiral Communications, a business incubator, Kah Howe is CEO of the Simulation Training Consultancy, which supplied the camp's web-based business simulations. Five other TIP alumni also volunteered their services as mentors.

The entrepreneurial bug has bitten and the students have asked the organisers to let them market the next camp to their peers – for a small commission.

They have even agreed to help organise the camp in December. “This way, they not only make some money promoting the camp in their schools, but also learn about planning a commercial programme,” said Roderick.

The event was supported by the Economic Development Board and sponsored by Dicota and Travelpac.

Public-spirited entrepreneur finds synergy in everything

Alumnus Roderick Chia, who has won the Tan Kah Kee Young Inventors’ Award five times, thrives on juggling projects and seeing them to fruition. The secret of his success? “I find synergy in all the things I do so that I can effectively manage my time,” he says. “It is always go kill more birds with one stone,” he adds thoughtfully.

In addition to being President of the TIP Alumni (TIPA), Roderick is CEO of Spiral Communications and Vice-President of the Innovators and Entrepreneurs Association (IdEA) of Singapore, which he founded in 2002.

He explains how the boot camp is an example of synergistic thinking: “As President of TIPA, I need to think of ways to give TIPA more exposure and raise funds for activities. As Vice-President of IdEA, I need to create awareness of its presence. The boot camp actually fulfils all these needs. Moreover, educating the young has always been of deep interest to me.”

Roderick even takes it upon himself to help promote the enterprising university that is his alma mater. He chose to hold the camp in NTU because it is a great showcase of the Nantah spirit of enterprise, a cultural inheritance from the former Nanyang University (Nantah).

NTU gathers global network of coastal scientists

Twenty-five top minds in environmental management, economics and oceanic sciences (right) visited NTU from 2 to 7 June. The distinguished professors and academics were here for the 15th LOICZ International Scientific Steering Committee (SSC) meeting and 1st LOICZ Regional Nodes meeting, hosted by NTU’s Environmental Engineering Research Centre (EERC). The Land-Ocean Interactions in the Coastal Zone (LOICZ) programme has been addressing key global land-ocean issues for more than a decade. A regional LOICZ node was recently established in Singapore at EERC to further the programme’s goals. Singapore Regional Node leader Assoc Prof Lawrence Koe, who is the Director of EERC, said the regional node in Singapore would advance the LOICZ mission by engaging people in the region in studies on earth system sciences and coastal preservation.
Helping you sleep better, age gracefully

 Battling insomnia and the ravages of time? You can soon put these problems to rest.

 This is because the School of Biological Sciences (SBS) is collaborating with the Waseda-Olympus Bioscience Research Institute in Singapore in the area of neurobiology.

 Researchers will explore the functions of the brain such as perception, and shed light on sleep disorders and degenerative brain diseases such as Alzheimer’s and Parkinson’s.

 Other neurological diseases associated with ageing will also be studied.

 The partnership arises from an agreement between NTU and Waseda University – a top university in Japan – to jumpstart a new alliance in life sciences.

 Tapping their research talent and industry networks in Singapore, Japan, and the Asia-Pacific region, both universities will advance the development of biotechnology, as well as commercialise intellectual properties from academic research.

 NTU and Waseda University have been collaborating since 2002. The latest alliance was formalised by Dr Su Guanling, NTU President, and Dr Katsuhiko Shirai, President of Waseda University, at a ceremony held at the new SBS building on 13 July.

 Can’t hear? They’ll lend an ear

 Welfare Services Club bags two awards for their heart work

 The Commonwealth Youth Programme has awarded the Welfare Services Club the 2004 Commonwealth Gold Award for being the best youth project team in Asia.

 The student club won their Camp Outreach initiative. Held annually for the past 11 years, this adventure camp for hearing-impaired youths is packed with activities – from rock-climbing and sea sports to computer lessons – that are designed to build self-confidence and leadership skills.

 Earlier this year, the 600-member club won the Singapore Association for the Deaf’s annual “I Luv You” Diamond Award for the sixth consecutive time.

 NTU named top IT-enabled organisation

 NTU has entered Asia’s most prestigious index of innovative enterprises for the year.

 As a CIO Asia 100 Honouree, it is among the top 100 organisations in Asia that have applied IT strategically to deliver innovations, value, and high returns to their communities.

 NTU wins the honour for its innovative use of educational and information technologies through edveNTUre, its e-learning platform, and for the wide adoption of its e-learning services.

 Although named among the crème de la crème of IT-enabled organisations in the region, NTU is not resting on its laurels, said Assoc Prof Daniel Tan, Director of the Centre for Educational Development (CED), which oversees the campus-wide e-learning initiatives.

 “The award is another morale booster for CED to continuously evaluate and humanise our e-learning services to enhance teaching and learning effectiveness,” he said.

 Blurring the distinction between robot and man

 Biologically-inspired androids stuff of new journal

 Next up: Intelligent and sociable humanoid robots.

 Read about them in the International Journal of Humanoid Robotics (IJHR).

 According to Assoc Prof Xie Ming from the School of Mechanical & Production Engineering (MPE), the new journal is dedicated to the R&D of humanoid robotics and will showcase the latest advancements in the development and application of advanced robots.

 “It is the only international journal that addresses the complex issues related to the physical body and artificial mind,” said Assoc Prof Xie, the journal’s founder and one of its three editors.

 Last year, he published the best-selling Fundamentals of Robotics: Linking Perception to Action, the world’s first monograph pedagogically detailing the systems aspects of robots.

 The inaugural issue of IJHR can be freely downloaded from www.worldscinet.com/ijhr/ijhr.shtml.

 Ukraine stint for students, staff

 An Eastern European destination is getting some students and staff excited. It’s the National Technical University of Ukraine “Kyiv Polytechnic Institute”, or NTUU “KPI” for short.

 NTU students and staff can now head there for study and research stints. NTUU “KPI” students and researchers can likewise come to NTU.

 The exchange arises from a Memorandum of Understanding signed between the two universities.

 NTUU “KPI”, established in 1898, has a strong science and technology focus that includes environmental protection, IT, aircraft and space technologies, and energy-saving technologies.

 Dr Mychalło Zgurovsky, Rector of NTUU “KPI”, said: “We are glad to formalise this partnership because NTU is renowned for its research, especially in the area of technology.”
Women at the top

"I Invent" might be their middle name, and there's no telling what Dr Tuti Mariana Lim, 36, and Eileen Fong, 23, might devise next. But this much is certain – the ladies impressed the international jury of the prestigious Global Women Inventors and Innovators Network (GWINN) Awards with their novel hi-tech inventions, and were honoured alongside fellow winners like Ms Olivia Lum of the Hyflux Group on 6 May at a gala dinner and award presentation ceremony in Singapore. The GWINN Awards, organised by the British-based GWINN, attracted nominations from around the world. Four Singapore women made it to GWINN's global top ten.

Visitors

During the period April to July 2004, NTU received the following distinguished visitors:

7 Apr Mr Zha Ye Jing, Mayor of Changzhou City, PRC; Mr Peter J Franks, Chief Executive Officer, World Association for Cooperative Education, Inc (WACE)

20 Apr Mr Fang Jian Wen, Chief Secretary, Chinese National Condition Investigation & Research Centre, PRC

21 Apr Mr Nasrallah Jahangard, Presidential Adviser, Supreme Council of Information & Communication Technology (History), Iran

22 Apr HE Dr Oleksandr Horin, Ambassador of Ukraine

8 May Prof Xu Zhihong, President, Peking University, PRC; and NTU Council Member

13 May Prof Yang Jichang, President, Jiangsu University, PRC

24 May Dr Mychailo Zgurovsky, Rector, National Technical University of Ukraine “Kyiv Polytechnic Institute”, Ukraine

7 Jun Mr Guillermo Martinez Mora, Secretary of Education of the State of Jalisco, Mexico

9 Jun Prof Zhang Junsheng, Chancellor, Zhejiang University, PRC

16 Jun Mr Zhao Qinping, Vice Minister for Education, PRC

13 Jul Mr Fu Honghe, Chairman, Hainan University Council, and Prof Tan Shigui, President, Hainan University, PRC; Prof Katsuhiro Shirai, President, Waseda University, Japan

We also received visiting delegations from the Genetic Education Group, Changchun University, and Changchun University of Science & Technology, PRC; Kasetsart University, Naresuan University, and Dhomburi Rajabhat University, Thailand; Universitas Muhammadiyah Indonesia and Brawijaya University, Indonesia; Multimedia University, Malaysia; Cantho University, Vietnam; Kyungbuk College, Baekseok College, Christian College of Nursing, Chon Nam University, and Chung Ang University, Korea; and University of London, UK.

Women at the top

Eileen Fong, Project Officer, School of Materials Engineering

Eileen, who did NTU proud last year by emerging a finalist in the 4th Young Inventors Awards, showcased a novel technique to coat metallic surfaces with human bone material (apatite) grown in the lab. When implants such as titanium plates and screws are coated this way, the human body is less likely to reject them. Molecular surfaces – and in fact, practically any other surface – can also be coated using this method. Eileen, an NTU First Class Honours graduate, is a member of the team behind the next generation biodegradable drug-releasing polymeric stents featured in our biotech special on page 10.

Re-appointments

Prof Lennie Lim Enk Ng, Associate Dean (Undergraduate Studies), College of Engineering

School of Biological Sciences:

Prof Lun Kwok Chan, Vice-Dean (Academic)
Prof Alex Law Sai-Kit, Vice-Dean (Research)
Prof Lars Nordenskold, Head, Division of Structural & Computational Biology
Assoc Prof Paul Law, Head, Division of Genomics & Genetics

Nanyang Business School:

Assoc Prof Geraldine Chen Yee Fong, Vice-Dean (Corporate Services)
Assoc Prof Koh Hian Chye, Vice-Dean (Academic Services)
Assoc Prof Dennis Ong Chin Siew, Sub-Dean (Business)

School of Computer Engineering:

Assoc Prof Calvin Wong, Head, Division of Computer Science

Assoc Prof Lau Chiew Tong, Head, Division of Computer Communications
Assoc Prof Leedham Charles Graham, Head, Division of Computing Systems
Assoc Prof Lim Ee Peng, Head, Division of Information Systems

NIE:

Assoc Prof Chen Lai Keat, Sub-Dean, Diploma Programmes, FP
Assoc Prof Sylvia Chong, Sub-Dean, PGDE, FP
Assoc Prof Vilma D’Rozario, Sub-Dean, Counselling & Development, FP
Miss Seah Suat Eng, Head, Special Training Programme, FP
Assoc Profjoy Chew Oon Ai, Head, Policy & Leadership Studies
Assoc Prof Mary Anne Heng, Head, Early Childhood Special Needs Education
Assoc Prof Tan Oon Seng, Head, Psychological Studies
Assoc Prof David Hung, Head, Learning Sciences & Technologies
Assoc Prof Chan Chiu Ming, Head, Asian Languages & Cultures
Assoc Prof Christine Lee, Head, Humanities & Social Studies Education
Assoc Prof Eugene Iuthayayar Dairianathan, Deputy Head (Music), VPA
Assoc Prof Stephen Hazell, Deputy Head (Drama), VPA

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School of Computer Engineering:

Assoc Prof Calvin Wong, Head, Division of Computer Science
Overcoming language barriers and eschewing the comforts of home, four groups of students roughed it out in rural Cambodia and India over the mid-year break – all for the sake of education.

Working under austere conditions, they refurbished a total of five high schools and ran classes on IT, English, sports, and first aid.

“Pinnacle of Hope”, Bangalore
Twenty-two students from the Welfare Services Club (WSC), for instance, spent 20 days in Bangalore doing backbreaking work for the Godrahally Government High School. They worked with carpenters to construct 50 benches with attached tables so the local students no longer have to sit on the ground during lessons.

They also painted six classrooms and equipped the school’s science laboratory – the only one in the district used by some 1,000 students – with a telescope, a model of the solar system, and animal specimens.

To overcome frequent drought problems in the village, they designed for the school a tank system for rainwater collection and storage.

The club is already planning to do more back-breaking work for education in Bhutan, a country nestled in the eastern Himalayas.

Other projects
In “Project Stolanh”, 23 students from the NTU Chapter of the Red Cross Humanitarian Network built a 260m-long canal to prevent flooding at a high school in Takeo, Cambodia. At another school, they constructed toilets and shower facilities. They also refurbished two classrooms, renovated an orphanage, and gave workshops on first aid and infectious diseases.

In another youth expedition project, 22 students from the Welfare Services Club set up a network-enabled IT lab at a higher secondary school in Kerala, India, and conducted IT and English lessons.

The Communicative Sports project also brought joy to many; 27 residents of NTU Hall 6 equipped a higher secondary school in Kerala with IT facilities. Their educational mission included running a sports education programme and conducting English lessons.