

ENGINEERUS

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TEMASEK
POLYTECHNIC

bringing education to life and life to education



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Temasek
Engineering School
where the future happens

GATEWAY to Success

With a total of 232 diploma courses to be offered by the 5 local polytechnics in 2012, 'O' level school leavers will be practically spoilt for choice. For those who find it hard to make up their minds, common "gateway" programmes are a viable option.



Diploma programmes with a common gateway offer students a single entry point and the chance to choose one diploma out of various courses after 1 or 2 semesters. These students will graduate with the same diploma as those who had joined that course right from the start.

Such programmes, mostly in the field of Engineering, allow students to defer their decision on which course to take, so as to "buy" more time to observe a particular industry's performance and the economic situation. During their common first 1 or 2 semesters, students can also put their interests to the test and discover where their aptitude lies, before deciding on the course that they want to pursue.

Our 5 local polytechnics offer the following common gateway programmes in the field of Engineering:

Polytechnic	Programme name	Number of diploma choices
NP	Engineering with Business Management Programme	9
NYP	–	–
RP	Common Engineering Programme	9
SP	Common Engineering Programme	8
TP	Common Engineering Programme	10
	Electrical & Electronic Engineering (EEE) Programme	5
	Mechatronics & Aerospace (MAE) Programme	2

Among the polytechnics, TP has the most number of common gateway programmes, and also offers the most number of choices from a single gateway.

Common Engineering Programme @ TP

This is the most flexible programme in the market, with 10 diploma courses to choose from. Students pick one course at the end of their first semester in Year 1, and start on their chosen diploma course from their second semester onwards. The 10 courses cover a wide range of disciplines, from Clean Energy and Microelectronics, to Aerospace Electronics and Aerospace Engineering.

EEE Programme @ TP

The 5 diploma courses under this programme are designed to prepare students for the Electrical & Electronic Engineering (EEE) degree course at Nanyang Technological University (NTU). Students pick their diploma course only after completing a common first year.

Michelle Ang See Yan, a former EEE Programme student from TP who is currently pursuing an Electrical & Electronic Engineering degree at NTU, found her university curriculum very similar to her diploma course at TP: "My diploma gave me the fundamental skills required for my studies at NTU," said the former Dunman Sec School student, who graduated with a Diploma in Electronics in 2010.

MAE Programme @ TP

This programme allows students to branch into either Mechatronics or Aerospace Engineering in their second semester. As both courses are related, this programme offers an ideal starting point. It also gives students a second chance to get into the highly popular Diploma in Aerospace Engineering course.



For enquiries on Temasek Poly's common gateway programmes, please email: enghotline@tp.edu.sg or check out www-eng.tp.edu.sg

ENRICHING EXPERIENCES @ TP

Secondary school students had an enriching time attending workshops and tutorial sessions in our School of Engineering. The activities aimed to introduce participants to the world of Engineering, while allowing them to pick up a new skill or knowledge relevant to their 'O' level syllabus. For enquiries, please email: sansan@tp.edu.sg



Physics workshop



Hands-on experience in using the Oscilloscope for St Hilda's Sec School



eNOVATION workshops



A series of workshops related to aerospace & aviation & biomedical science for Nan Chiau High, Henderson Sec, Yuying Sec, Zhonghua Sec & Hai Sing Catholic



"Listen to Your Heart"



Biomedical workshop for St Hilda's Sec School



Common Engineering Programme Roadshow



Holy Innocent's High School's "Science Day 2011"

SUSTAINABLE IDEAS

Win Awards

Students and staff from the Diploma in Integrated Facility Management won two prizes in the inaugural Building Information Modelling (BIM) competition held on 25 Apr '11.

Team "TP One" clinched the "Best Publication & Presentation" Award in the Students (Architecture) category with their proposed design of a Boat Hotel to be located next to Clarke Quay, while Team "TP-5" won the "Best Use of Sustainable Design" Award in the Mechanical & Electrical (Professional) category for their design of a building incorporating sustainable electrical, plumbing and daylight simulation.

The competition required participants to make use of BIM elements such as conceptual design, modelling, documentation, and simulation & analysis to design and model buildings or facilities.

Organised by the Building & Construction Authority and BuildingSMART Singapore, the competition saw 47 teams comprising both students and professional architects taking part.



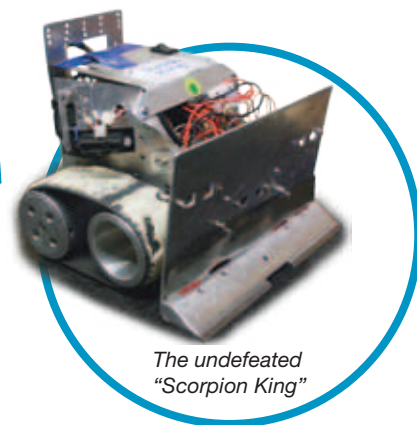
Team "TP One" with the concept they presented



Team "TP-5"

THE INVINCIBLE KING

The Electronics students who swept all 3 awards in the "Autonomous Sumo Robot" category (from left): Gaurav, Rohit & Tushar, with veteran robotics coach, Mr Lim Hock Beng



The undefeated "Scorpion King"

Engineering students clinched 2 Gold, 1 Silver, and 4 Bronze awards at the annual Singapore Robotic Games (SRG) held from 25 – 27 Jan '11.

They swept all three awards – Gold, Silver and Bronze – in the "Autonomous Sumo Robot" category, traditionally the School's strongest field, with their invincible "Scorpion King" robot remaining undefeated for a 4th consecutive year. The second Gold came in the "Intelligent Robot" category.

The SRG, organised by the National University of Singapore, aims to inculcate an understanding and appreciation of robotics and automation and to encourage innovation among today's youths.



Serene (left) and Charlene with their supervisor, Mr Hong Geok Hua

TAPPING ON CREATIVITY

Self-Cleansing Water Tap

Most taps in public toilets come with a spring mechanism which automatically turns off the tap after a few seconds; that is, you will have to constantly press the tap to keep the water running. As a result, the tap is often left soiled with soap from your hands. This auto cleansing tap is able to dispense a stream of water from the top, thereby flushing any soap or impurities away, so you do not have to manually scoop water onto the tap with your hands.



A small amount of water is diverted from the pipe, oozing out at the top

This unique invention was the creative idea of 2 students from the Diploma in Business Process & Systems Engineering (BZE). It won a Merit prize in the Tan Kah Kee Young Inventors' Award competition held in May 2011.

Elderly-EZ Quad Stick

Another project, also by BZE students, was given a Commendation award in the same competition. The "Elderly-EZ Quad Stick" is a unique walking stick with wheels that allow the user to glide it along effortlessly. The wheels will retract into their housing when pressure is applied, thereby planting the rubber base of the 4 legs firmly on the ground. The vertical handle can also be tilted towards the front or back to facilitate walking.



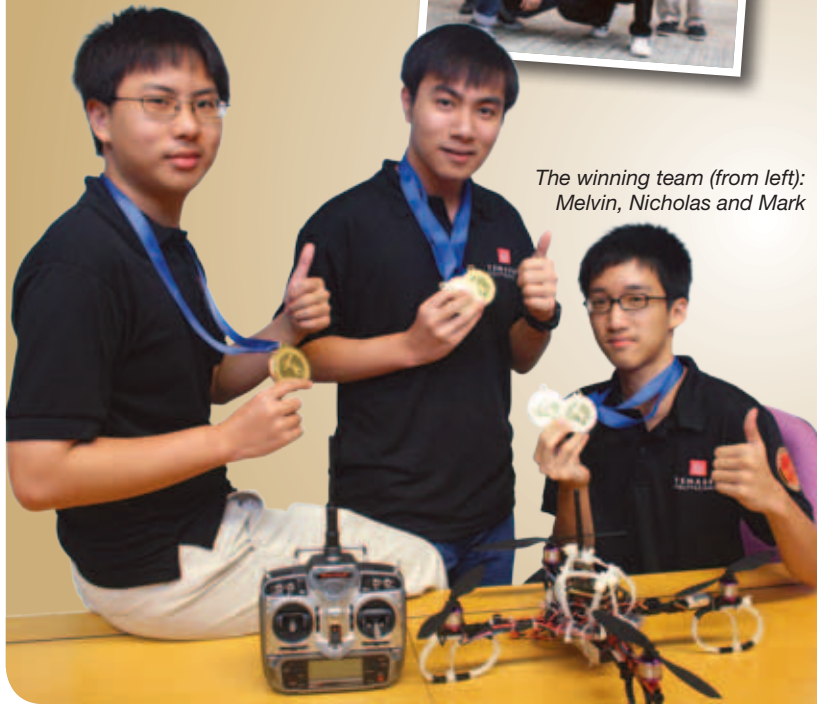
The tilting mechanism at the base of the handle



Qishan (left) and Rita with their invention



The retractable wheel on each leg



The winning team (from left):
Melvin, Nicholas and Mark

AMAZING VICTORY

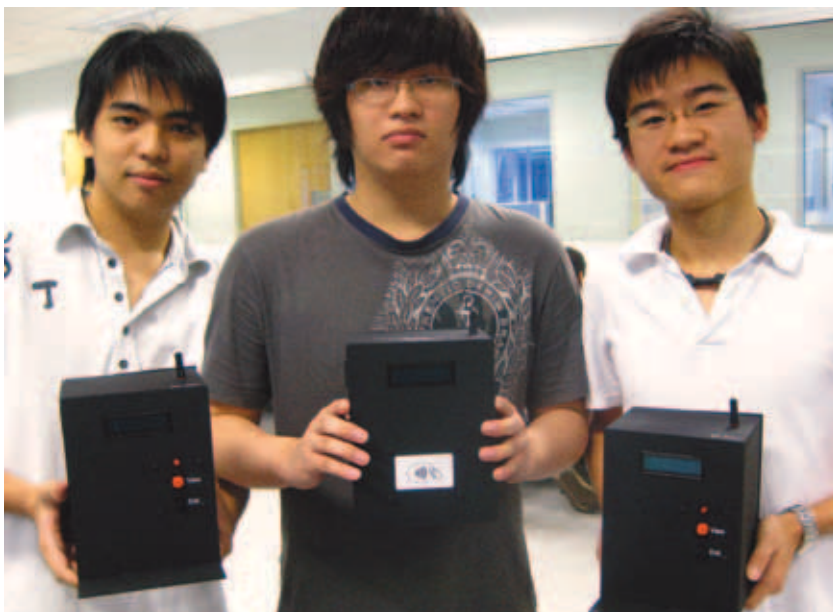
Aerospace Electronics students clinched the Gold medal for Best Performance at the Amazing Flying Machine Competition held at the Singapore Science Centre on 18 Mar '11. They also took home the Best Team Spirit award.

A total of 36 teams took part in the tertiary category of the competition, which requires participants to design, build and fly their own flying machines, ranging from simple paper gliders, to remote-controlled and battery-powered aircraft.

Entries were judged based on criteria such as aesthetics, performance and creativity.

The event was jointly organised by DSO National Laboratories and the Singapore Science Centre.

WE'RE L KING FOR YOU, SIR...



Enhancing communication between staff and students are (from left):
Fook How, Xin Min and Xin Long

Can't seem to find your lecturer in the staff room? With this device, you can get your message across to your lecturer in the fastest possible time.

Just key in your message on a keypad, select your lecturer's name or ID number, and send it! The message will be transmitted wirelessly to the terminal in your lecturer's cubicle. The moment your lecturer returns to his desk, device will detect his presence, beep, and display the message on its LCD panel.

Called "Send It, Get It!", this device invented by 3 Computer Engineering students using a PIC Microcontroller, clinched the Silver award in the Yes-PIC competition held in January 2011, while another project, the "Low Cost Alert Alarm System", took the Bronze.

What the lecturer sees in his office



LEARNING FROM THE CHINESE

A first-hand opportunity to observe the aerospace training facilities (including an airfield) at a top Chinese university and learn about how operation manuals are used to troubleshoot problems in commercial aircraft – that was what 16 students got during a trip to the Civil Aviation University of China (CAUC) in Tianjin, from 11 – 20 Jun '11.

The students, who were from the Diploma in Aerospace Electronics and Aerospace Engineering, also visited the Beihang University of Aeronautics and Astronautics in Beijing, where they found out about modern training methods.

The trip to Tianjin would not have been complete without a visit to its Eco-City, where the students checked out the clean energy infrastructure, before immersing themselves in history at the Great Wall of China, Forbidden City, and the “Bird’s Nest” Olympic Stadium.



TP's Aerospace students at CAUC

FIGURE IT OUT...

and win yourself a limited edition thumb-drive!

There are 8 slabs which are supposed to weigh 20g each, but one of them actually weighs only 19g. Using the balancing scale shown here, determine the least numbers of trials before you can identify the 19g slab. You need to explain your answer.

This contest is open to secondary school and ITE students only. Email your answer, with name, school, and HP number, to: cheeseng@tp.edu.sg with the subject title, “**Engineerrus Maths Puzzle 1**”.

The first 10 correct entries drawn after the closing date (1 Dec 2011) will each win a limited edition hand-crafted wooden thumb-drive.

Winners will be judged on the correct answer as well as how clearly they explain their logic behind the answer.



ICE ICE BABY

■ By Anna Krizia Amagsila (BIE)

“It was *not* love at first sight”, says Serene Tan, 19, as she recalls the first time she put on her ice-skates at the tender age of 8.

The final year student from the Diploma in Business Process & Systems Engineering, now an ice-skating champion, explains how her love for the sport blossomed after watching an ice-skater while holidaying in Korea when she was in Primary 5. “I was inspired and I wanted to do all those graceful movements,” she recollects.

Training seriously, she earned her first medal that year – a Silver award at the Skate Asia competition in 2003. Her most recent success was emerging 1st runner-up at the National Figure Skating Championship in February 2011.

Despite training 2 to 3 times per week, for 3 hours each time, Serene ensures that ice-skating does not affect her studies. “There is a time for everything – time to study, time to skate, and time not to skate,” she rationalises.

“Ice-skating has taught me that if you fall, you must pick yourself up and try again. When you finally succeed, the result is beautiful,” says the former student of Coral Sec School.



CAN YOU HEAR ME?



Do you normally listen to music from your mobile phone or MP3 device? Now you'd better think twice before you plug in your earpiece.

A study conducted by final year students from the Diploma in Biomedical Informatics & Engineering (BIE) has revealed that those who are exposed to loud music via mobile personal music players have poorer hearing compared to those who are not exposed.

Typically, a 15-minute exposure to 100 decibels (equivalent to an MP3 player at full blast) will cause some degree of hearing loss.

Extending their research further, BIE students are currently conducting a series of free hearing tests for 2,000 Engineering students in the school. Part of a collaboration with Panasonic Systems (Asia Pacific), the tests aim to confirm the effect of prolonged use of mobile music devices on hearing acuity.

Panasonic will also donate 20 high-end hearing aids, each worth more than \$2,000, which BIE students will expertly customise and fit on staff and students in the school who need them.



BIE students conducting hearing tests on Engineering students



ENGINEERING

ORIENTATION 2011

Welcome to our Family...

More than 1,000 new Engineering students took part in the Orientation from 19 – 21 Apr '11. Besides talks and tours to familiarise them to the new campus and programmes, the Freshies also participated in telematch games, a mass dance, a dragon boat race, and cheering competitions, culminating in a jam & hop on the final evening. Not surprising that everyone was shagged out and most went home with a sore throat!



WHAT'S FOR LUNCH?

■ By Rohit Menon (ELN) & ENGINEERRUS Team

Tired of food in the school canteens? Did you know that there are actually 9 coffee shops within walking distance of the campus, offering a wide variety of exciting cuisine? **ENGINEERRUS** susses out some less-known gems tucked away in obscure corners that offer value-for-money...

Al Amin Malay Food

Juz Eat Cafe | Blk 820, Tampines St 81



Price: \$2.50

Rating: ★★★★★

Check out the mouth-watering *Lontong*, served piping hot with a generous helping of grated coconut and perfectly boiled vege. If you are less hungry, go for the tasty *Mee Rebus* – its gravy is uniquely thick and savoury.

合家 Handmade Noodles

Choh Dee Place | Blk 824, Tampines St 81



Price: \$2.50

Rating: ★★★★★

On cold rainy days, head straight to this stall and be warmed by the chewy-textured handmade *Ban Mian* which comes with a soft-centred poached egg and crispy *Ikan Bilis*. For a change, try the *Yee Mian* or *Mian Xian* noodles.

缘满 Vegetarian

829 Food Court | Blk 829, Tampines Ave 3



Price: \$2.40 (staple with 2 dishes)

Rating: ★★★★★

You don't have to be a vegetarian to savour this. Pick from an array of about 20 dishes – all vegetarian – to go with your Bee Hoon, rice, or porridge. Highly recommended are the crispy bean curd (*Dao Ki*) and deep fried "fish" nuggets.

Prawn Noodles

Tp 802 Food House | Blk 802, Tampines Ave 4



Price: \$3.00

Rating: ★★★★★

This little-known and humble-looking stall actually serves the most delightful prawn noodles, topped with generous portions of mushrooms and succulent lean pork slices. The soup, prepared from prawn husks, is clear and tasty. Must try!

Srisun Prata Paradise

Blk 822, Tampines St 81, #01-202



Price: \$1.50 (egg), 90¢ (plain)

Rating: ★★★★★

The steaming egg-prata, expertly hand-tossed for softness and fried to a delicate crisp, glistens with the aromatic melted butter. The curry, moderately spiced, makes a perfect combination. Check out the variety of prata flavours, from cheese to chocolate.

Penang A1 Chendol

Blk 822, Tampines St 81, #01-192



Price: from \$1.00 to \$3.00

Rating: ★★★★★

Check out the dizzying array of specialties, from bubble teas to fruit smoothies and desserts. Try the durian smoothie and the new 'Mango 300' – a pure blend of mango pulp for those who don't like milk. The mango smoothie with corn flakes is awesome too.

FLIGHT IN DARKNESS

■ By Iqbal Saifuddin Ahmad (AMS)



It was with some apprehension that I volunteered to be a “mentor” to members from the Singapore Association for the Visually Handicapped (SAVH) during their visit to the Singapore Youth Flying Club (SYFC) on 4 May '11.

We were first briefed by SAVH on how to communicate aviation concepts to the visually impaired. Despite initial apprehensions, we took on our task with unprecedented gung-ho. Everyone spoke excitedly about aircraft anatomy with vim and vigour, using styrofoam and plastic models of classic aircrafts as tactile aids.

The highlight of the afternoon was the “touch-and-feel” session, when our visually impaired friends traced the entire frame of the aircraft with their hands, touching every nook and cranny, from its sleek polished exterior and its precisely engineered propellers, to the complex inner workings of its controls. Amazingly, although deprived of their sight, they were able to use their sense of touch, smell, taste and hearing as their “eyes”.

The visit was definitely an eye-opening experience for us, as I'm sure it certainly was for our visually impaired friends.

— Photos by Patrina Goh

FOOD FOR THOUGHT...

Rice, instant noodles, canned food and biscuits – these are things that we all take for granted. But for the less fortunate, that could be their lifeline.

About 250 Engineering students from LIFE (**L**ove **I**nitiative **F**rom **E**ngine), a community interest group in the School, launched a food donation drive on campus from 11 – 13 May '11, collecting food items from staff and students. Then, working with Nebo, the youth wing of NTUC, the students helped to collect food items outside 5 major NTUC Fairprice outlets in the east on 14 May '11.

The rations were then delivered to the Shan You Counselling Centre, a non-profit organisation which distributes them to more than 6,000 needy families and individuals under its care.

In total, the students collected more than 10,500 food items worth about \$25,000. Besides doing something for the needy, the exercise has helped to foster teamwork and a meaningful sense of purpose among the students.



Checking the expiry date of food items



Look at his face... it's hard work!

GRADUATION 2011

About 1,400 Engineering students received their diplomas over 4 graduation ceremonies held on 25 & 26 May 2011 at Temasek Polytechnic's Convention Centre.



WHEN FAILURE IS THE START OF SUCCESS



Receiving his diploma and medal from the Guest-of-Honour, Mr Phua Koon Teck, Vice President (Project Operations) of Excel Marco Industrial Systems Pte Ltd



Shi En with his proud ITE teachers (from left): Mdm Asrina, Mr Fong Chiew Min, and Mr Lee Jim Hao

Showing that failure should not be a deterrent to success, Mechatronics student Lum Shi En, who was removed from his course in 2003 because he could not cope with his studies, rejoined the course from scratch in 2008 after completing his National Service, and eventually won the prestigious Tay Eng Soon Gold Medal with a GPA of 3.97.

WHEN GOALS MATTER

Electronics student, Eugene Luo, won the All Round Excellence award, demonstrating that it is possible to juggle a demanding co-curricular activities schedule and academic work. The national Young Lions soccer trainee and captain of the Polytechnic's soccer team graduated with a GPA of 3.73.



Eugene (with tie) with his teachers from Ahmad Ibrahim Sec School (from left): Form teacher Ms Emily Toh, soccer manager Mr Faizal Osman, and coach Mr Abdul Aziz

FUNDING FOR STUDENTS

The Singapore Manufacturer's Federation (SMA) has contributed \$50,000 to the School of Engineering, with the money going towards project funding and prizes, scholarships for students, and in particular, fuel cell research and development.

The cheque was presented by SMA President, Mr George Huang, to the Principal and CEO of Temasek Polytechnic, Mr Boo Kheng Hua, at a presentation ceremony held on 23 May '11 in conjunction with the School's graduation ceremony. It was witnessed by the Guest-of-Honour, Minister of State (Home Affairs), Mr Masagos Zulkifli and the Chairman of the Polytechnic's Board of Governors, Mr Seah Moon Ming.



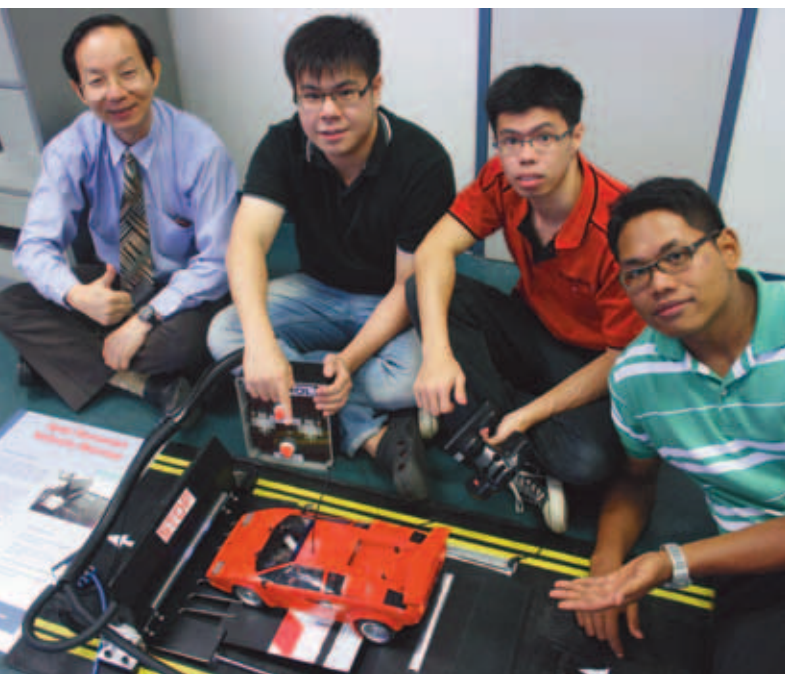


OR ELSE...

If you ever thought of running a police road block, you'd better shelve the idea.

Three Mechatronics students have invented a unique vehicle barrier that will literally stop you in your tracks!

When the tyres of your car run over a sensor on the road, a barrier is automatically erected ahead of you. As your speeding car hits the barrier, another sensor on the barrier will activate a mechanism that raises the ramp directly under your car, thereby lifting your tyres off the ground and immobilising the car.



Helping to enhance homeland security are (from right): Ruzaini, Zhi Wei and Jun Wei with their supervisor, Dr Patrick Chua

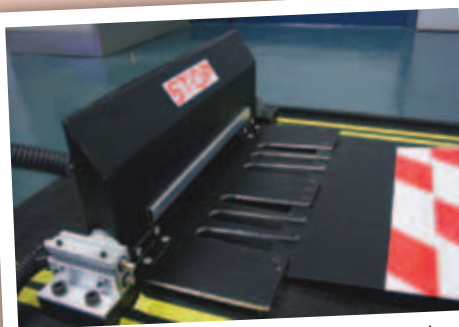
Ideal as a weapon against terrorists, this new barrier can be deployed at checkpoints in high security areas. It is more effective and safer than the spikes that are currently used by the police to puncture the tyres in order to stop a fleeing car.

Project leader, Chee Zhi Wei, explained: "Puncturing the tyres might cause the car to overturn or stray off course, thereby injuring by-standers, bursting into flames, or even detonating the explosives which might be inside the car."

To enhance safety further, water rather than conventional oil is used in the hydraulic actuator and cylinders that power the ramp.



A limit switch serves as the sensor to detect an approaching car



A barrier is then erected by a rotating water hydraulic actuator



A second limit switch detects that a car has smashed into the barrier



Two water hydraulic cylinders then drive a wedge under the movable ramp, thereby lifting up the car



The front wheels of the car slip into a groove, while the back wheels hang over the edge of the raised ramp

TOWER of STRENGTH



Priscilla, the queen of hearts at RWS

■ By Rohit Menon (ELN)

If you think this girl is short, wait till you see her at work. Standing at a mere 1.47m, Priscilla Tan Jie Yin's petite frame belies her favourite pastime – stilt walking. When she mounts the stilts, she towers over everyone.

This former TP student, who graduated in 2010 with a Diploma in Business Process & Systems Engineering (BZE), works part-time as a stilt-walker with Tian Eng Dragon & Lion Dance Centre, and has performed at major events and shows at Resorts World Sentosa (RWS), the American Club, and shopping malls across the island.

“Stilt walking is not easy. When I first started, it was very scary and I took a few hours to learn to balance myself,” says Priscilla, who picked up the sport in 2004.

Does her decision to take up stilt-walking have anything to do with her height, or rather, the lack of it? “Nah... I always like to try something different and learn a new skill,” explains the former student of Siglap Sec School.

“Stilt-walking requires determination and discipline – just like all challenges and obstacles in life,” advises the 24-year-old goal-getter.

But Priscilla is not always on stilts. She holds a day job as an Administrative Executive at Trillion Lifestyle Pte Ltd, a yacht chartering and event management company. Besides basic admin duties, she also helps with the accounts.

“My BZE diploma has given me a basic understanding of businesses and that helps me in my job,” she assesses gratefully.

With her hard work and persistence, Priscilla will certainly scale even greater heights in her career – and we don't mean just literally walking on stilts.



**Tian Eng Dragon
& Lion Dance Centre**

Present this coupon and get

10% off

when you book any stilt-walking or lion dance performance

UP: \$200 per stilt-walker per hour / \$518 per pair of lions

Daniel Lim : 91456001

Email : enquiry@tianeng.com.sg

Website : www.tianengdragonliondance.com.sg

Expiry date : 31 Dec 2011

At a mid-autumn
show at
RWS in 2010



Keeping her feet on
the ground despite her
success

CHALLENGING HIGH ACHIEVERS



The EEE team of lecturers was awarded TP's Education Innovation Award 2011 for developing the "Higher Engineering Skills 1 & 2" electives

Students who do well academically can now take special "by-invitation-only" electives to equip them with higher order skills and add value to their diploma.

EEE student, Ahmed, with the infra-red encoder and decoder circuit he fabricated



The "Higher Engineering Skills 1" elective, for instance, was offered to 52 students from the Electrical & Electronic Engineering (EEE) programme who did well in their first year. It comprised a 9-day training course (7 – 17 Mar '11) during which students had a fun time building applications that make use of infra-red and RF transmitters and receivers as well as ultrasound transducers.

"Higher Engineering Skills 1 & 2" are part of 5 special electives that aim to stretch high achievers to their fullest potential. The other 3 electives are "Special Projects 1 & 2", and "Higher Engineering Maths". They are worth 2 to 4 credit units each, and have no bearing on GPA score.

SCHOOL OF ENGINEERING DIPLOMA COURSES / PROGRAMMES

- ▶ 3D Interactive Media Technology
- ▶ Aerospace Electronics
- ▶ Aerospace Engineering
- ▶ Aviation Management & Services
- ▶ Biomedical Informatics & Engineering
- ▶ Business Process & Systems Engineering
- ▶ Clean Energy
- ▶ Computer Engineering
- ▶ Electronics

- ▶ Green Building & Sustainability
- ▶ Infocomm & Network Engineering
- ▶ Integrated Facility Management
- ▶ Media & Communication Technology
- ▶ Microelectronics

SPECIAL PROGRAMMES

- ▶ Common Engineering Programme
- ▶ Electrical & Electronic Engineering Programme
- ▶ Mechatronics & Aerospace Programme

COURSE ENQUIRIES

Tel : 6780 5144 / Email : enghotline@tp.edu.sg / Website : www-eng.tp.edu.sg / Blog : temasekpoly.wordpress.com / Facebook : Temasek Eng Sch

EDITORIAL TEAM

Editor: Edwin Loo

Student Team: Anna Krizia Amagsila, Priscilla Chin, Michelle Tan, Rohit Menon, Divya Mahtani, Alan Tay, Musfirah bte A Rahman, Nur Amalina bte Mazzly, Don Lim, Liu Ju Xian.

Email: engineerrus@tp.edu.sg **Website:** w3-eng.tp.edu.sg/emag

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