

What are the different ways to get into a Polytechnic? P2

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SUCCES

Solve a puzzle & WIN a thumb-drive! P12

Temasek

POLYTECHNIC

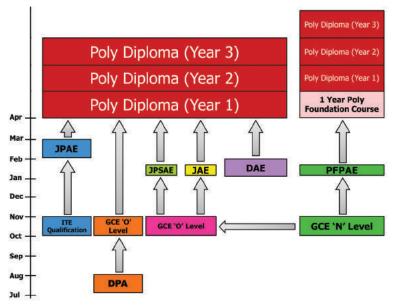
EDUCATION SPOTLIGHT

There are several ways to get into a Polytechnic, with various admission exercises throughout the year. **ENGINEERRUS** looks beyond the confusing acronyms and sums up the various pathways.

A polytechnic education in Singapore is becoming more popular. This is because employers today like the practice-oriented training offered by polytechnics, resulting in a greater demand for poly diploma holders and hence higher starting salaries.

In addition, a polytechnic education is now a viable stepping stone to a university degree. With more universities being set up in Singapore, and existing ones offering more places to poly diploma holders, about 15% of each poly cohort now makes it into a local university. This figure is set to rise to about 25% within the next decade.

With the increasing value of a poly education, it pays to be aware of the different pathways into a polytechnic for school leavers at various points in their educational journey:



The various routes to Polytechnic

JAE

The Joint Admissions Exercise (JAE), held in January each year, accounts for the biggest poly intake. School leavers apply for a place in a polytechnic using their 'O' level exam results, for which they must obtain an aggregate (L1R2B2*) of not more than 26 points. In addition, they must meet the minimum entry requirements of the course for which they apply.

JPSAE

The Joint Poly Special Admissions Exercise (JPSAE) considers students for admission based on a broader range of merits such as Co-Curricular Activities (CCA) achievements. Applicants may be required to attend an

interview, submit a portfolio, and undergo a trial or test. The JPSAE is usually held in conjunction with the JAE in January each year.

JPAE

The Joint Poly Admissions Exercise (JPAE), held in February each year, is for applicants with the relevant ITE qualification.

DAE

The Direct Admissions Exercise (DAE) for local students caters to applicants who are not eligible to apply for courses under the JAE, those who missed the English Language requirement by one grade, holders of the GCE 'A' level certificate and NITEC/Higher NITEC from ITE, and former poly students seeking re-admission. It takes place twice a year, for the April and October intakes.

DPA

The Direct Poly Admissions Exercise (DPA), held in July each year, allows 'O' level students to secure a place in the course and the polytechnic of their choice before the 'O' level exams. They will be required to attend an interview and/or test, and successful applicants must still take their 'O' level exams, obtain an L1R2B2* aggregate of not more than 26 points, and meet the minimum entry requirements of their chosen course. Successful applicants must attend an 8-week Poly Preparatory Programme before the start of their diploma course in April.

PFPAE

The Poly Foundation Programme Admissions Exercise (PFPAE) is a through-train programme which allows the top 10% of Sec 4 Normal (Academic) students to skip Sec 5 and proceed directly to a polytechnic without taking their 'O' levels. But they need to do a one-year Poly Foundation Programme which they must pass, before starting on their 3-year diploma course. Eligible students will be invited to apply after the release of the 'N' level exam results in December each year.

* L1R2B2 = English language, 2 relevant subjects, and 2 other best subjects



Polytechnic education offers practice-oriented training that is highly valued by employers today

TEACHERS ON A LEARNING JOURNEY

Teachers posing with a fuel cell powered vehicle in the CERC

Poly Awareness Programme

Teachers from 5 secondary schools attended a oneday Poly Awareness Programme at the School of Engineering on 5 Jun '13. They visited the Clean Energy Research Centre (CERC), the Interactive Digital Centre Asia (IDC Asia) and the Robotics & Automation Centre, getting a feel of the facilities and high-tech equipment which Engineering students in the School use.

Xinmin Sec Visit

To find out about the best practices which they could apply in their teaching, 21 teachers from Xinmin Sec School embarked on a learning journey to TP's School of Engineering on 3 Jul '13. Interacting with lecturers, they learnt about project collaboration with companies in the industry, internship opportunities for students and learning programmes in the School.

Mdm Susan Lee (right), School Staff Developer at Xinmin Sec School, receiving a memento from Ms Angela Cheong, Outreach Marketing Executive of TP's School of Engineering



The visit was certainly a wonderful learning experience for our teachers. We are particularly impressed by the immense effort that the School of Engineering @ TP has put in to identify and cater to the current and future needs of its student population.

min Sec teachers

- Mr Lim Boon Ping HOD Science Xinmin Sec School

Were you here ?

Hundreds of secondary school students visited TPL School of Engineering in May 2013, where they attended workshops and picked up new skills related to the field of Engineering.

Were you one of them?



SO

SEC SCHOOLS SCENE

4

Z

("Sound & Audio Amplifier" workshop, 29 May '13)



Broadrick Sec School (Tour of facilities, 29 May '13)







/ Bedok Town Sec School ("Biology - Know Your Heart" workshop, 22 May '13)



Sengkang Sec School ("Physics: Oscilloscope" workshop, 29 May '13)

FTER



Dishing out your favourite meals are (front, from left): Mervyn, Chun Kang and Wai Chung with their supervisors

THOUGHT FOR FOOD

You have heard of robots that can vacuum the floor for you, and robots which you can "wear" to help you lift heavy weights.

Now here's a robot that can dish out tender loving care – by feeding you.

Called the "Food & Beverage Robotic Arm", this robot is able to mimic the feeding motion of human beings, so as to feed patients with special needs such those whose upper limbs are immobile. With this robot, caregivers can be relieved of some of the feeding duties at rehabilitation homes. Various utensils can be attached to the tip of the arm, and the robot is also programmed to add, stir and mix sauces. For fast eaters, just flip a switch and the robot will feed you at shorter intervals.

This project clinched an Award of Excellence (the top award) at the National Assistive & Rehabilitation Technology Students' Challenge (A&RTs) held on 22 & 23 May '13.

It was one of 3 Awards of Excellence won by TP Engineering students – the most among all participants in the competition – who also grabbed a Merit Award and a Best Presentation Award.



Flexible joints make the robot extremely versatile



Once upon a time, there was an ugly duckling. Walking along a street, the duckling sees a poster about promotional packages by beauty salons, each stating that they had the lowest price in town, and decides to go for a makeover. But when the duckling gets to the salons, she overhears the salon owners discussing how to collectively fix their prices at a high rate. Disgusted, she makes a report to the authorities, and magically turns into a beautiful swan.

The above story is told by an animation clip produced by 3D Interactive Media Technology students from TP. Entitled "The Ugly Duckling", it won a Merit Award in the Tertiary Category of the CCS Animation competition held on 11 Jun '13.



The winning creators of "The Ugly Duckling" (from left): Xenia, Antony and Elaine

The competition, which required participants to produce an animation clip about fair competition, aims to raise awareness of competition law in Singapore and was organised by the Competition Commission of Singapore (CCS).



WALKING FAME

A simple structure, called the "H-Frame" which helps the elderly and infirm to walk safely has clinched the Gold award in the annual IES Design Award competition.

Invented by 3 students from the Diploma in Business Process & Systems Engineering, the "H-Frame" provides better support than a conventional walking stick, while not being as cumbersome as a walking frame. When not in use, the "H-Frame" can be collapsed into a single walking stick and easily carried around.

Another project, the "WeCare Smart Application" by Computer Engineering students won the Silver award, while the "Gap Crossing Wheelchair" by Mechatronics students took the Merit award.

The competition was held on 23 Mar '13.



How do you communicate with the hearing impaired if you do not know sign language?

Realising this has been a problem, 3 students from TP's Diploma in Infocomm & Network Engineering (INE) have developed an application, called the "Moving Hand Interpreter", which is able to interpret hand gestures made by the hearing impaired, and translate

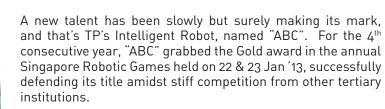
them into words and text which can be understood by the caregiver or someone with no knowledge of sign language. The message can be displayed as text on the screen, or broadcast aloud in a choice of 20 different languages.

This highly versatile and useful application, which helps to solve a social problem, won the 2nd Runner-up position in the Imagine Cup World Citizenship competition held on 15 Jun '13.



INE students (from left): Lennon, Soon Lye, and Kai Yu, with their prizes

WINNING IS AS SIMPLE AS "ABC"



Former champion robot, the "Scorpion King", had to settle for a Commendation award. Veteran robotics specialist, Mr Lim Hock Beng, who is the brainchild behind the "Scorpion King", admitted: "The King is getting old and its technology is fast becoming outdated. This shows that one cannot live on past glory; if you don't keep abreast of technological developments, you get left behind."

In all, robots from Temasek Poly won 1 Gold, 1 Silver, and 2 Commendation awards at the competition.

Champion robot "ABC" with their handlers (front, from left) Han Wenyan and Zhou Zeyu, with their supervisors

EASY DOES IT

When Mechatronics student Christopher Brang saw how an elderly woman with weak legs struggled to alight from a car, he realised how much pain she must have felt. Determined to find a solution, he thought of the "Lazy Susan" which is placed atop a dining table to rotate food.

"Surely, if food can be rotated, so can one's buttocks," he thought. Together with fellow Mechatronics students, he invented a rotating seat for the car. Dubbed the "Easy Susan", the device works on the same concept as the "Lazy Susan". But instead of spinning food on a table, it allows a patient with weak lower limbs to turn about easily on the seat of a car when getting in and out of the vehicle.

The device earned his team a Commendation Award at the annual Tan Kah Kee Young Inventors' Award competition held in April 2013.





Team Ethereal from GBS with a model of their winning design



Students from the Diploma in Green Building & Sustainability (GBS) won the Silver award in the Green Sparks competition held on 15 Mar '13.

Participants were required to conceptualise a revolutionary green show suite with various cost effective and innovative green

design features to achieve minimal energy and water consumption. In the process, they learnt to appreciate the social, economic and technological challenges and the importance of taking an integrated design approach when conceptualising green buildings.

A second GBS team won the Merit award.

A total of about 30 teams from various local universities and polytechnics participated in the competition, organised by the Building & Construction Authority.

FLYING SUCCESS

Aerospace students from TP showed the world a glimpse of the superior aerospace training which they receive in the School of Engineering, when they asserted their dominance at the

Singapore Amazing Flying Machines competition held on 26 Mar '13.

They clinched a total of 2 Gold, 3 Silver and 1 Bronze awards, including three for "Best Performance".

TP's team "Happy Birdy" emerged the overall 1st Runner-up in the Open category and took home 3 other awards, including a Silver for Best Performance and a Gold each for Best Presentation and Best Video.

The competition requires participants to design, build and fly their own flying machines, ranging from simple paper gliders, to remote-controlled and battery-powered flying machines.

The "happy birdies" (front, from left): Jun Jie, Jasmine, Bentsen and Sankaran, with their supervisors



Team "Vortex" (left) clinched a Silver for Best Performance, while Team "Wind Chaser" took the Bronze

SHE MEANS **BUSINESS**

In 2011, while her peers were concentrating on passing their polytechnic exams, a student from the Diploma in Business Process & Systems Engineering (BZE), Serene Tan, was already thinking about how to make money from a business venture.

Realising that there was a huge "silver" market because of Singapore's rapidly ageing population, she filed a patent for the "Intelligent Walking Frame" (later renamed "GlydeSafe") which she had been working on as her final year Major Project.

Combining her passion to be an entrepreneur, the business knowledge she had gained from her diploma course, and the technical know-how derived from her final year Major Project, Serene then set up her own company, Sorgen Pte Ltd, which sells rehabilitative devices for the elderly.

Her business idea was so workable that it won the Gold award at the Business Venture Challenge (Open



Serene (2nd from left) was supported by her business partner Aaron Boo, current BZE student Rebecca Tan and supervisor Hong Geok Hua

Category) held on 25 May '13, earning her \$10,000 to help further her commercial goals.

The competition, which serves as a national platform for aspiring entrepreneurs, was organised by the NUS Entrepreneurship Society. **Graduation 2013** About 1,500 Engineering students received their diplomas over 4 graduation ceremonies held on 22 & 23 May '13 at Temasek Polytechnic's Convention Centre.





STAND UP To achieve

A former victim of school bullying has had the last laugh. Jeremy Jee De Sheng, who was bullied during his lower secondary school years and who struggled academically through Sec 3 & 4, has topped his cohort at Temasek Polytechnic with a remarkable perfect cumulative grade point average (CGPA) of 4.0, scoring 27 Distinctions and 3 A's during his 3 year diploma course.

Jeremy's outstanding achievement earned him the prestigious Lee Kuan Yew Award as well as the Diploma in Info-communications Course Gold Medal.

The former student of Temasek Sec School has demonstrated that being an underdog is not a barrier to success; in fact, it is when the going gets tough that the tough gets going.

Jeremy is slated to begin his double degree programme in Business Administration & Computing at NUS on a PSC Singapore Government Scholarship (Open) in 2015.



Jeremy with his proud parents

SMASHING SUCCESS



Another top performer was national badminton player, **Thng Boon Seong**. The former student of Ngee Ann Sec School, who took a 2-year break to train full time with the national badminton team after his 'O' levels, eventually realised that "in order to survive in Singapore, a good education is a must". And he got more than just a good education at Temasek Polytechnic.

Boon Seong graduated with a Diploma in Electronics, chalking up a CGPA of 3.83 with 19 A's and 2 Distinctions during his 3-year course, despite his hectic schedule as the Polytechnic's badminton team Captain. He also won the Lee Kong Chian Award for All-Round Excellence, the Sports Person of the Year award in 2012, and the Singapore Olympic Foundation-Peter Lim Scholarship.

Boon Seong and his fiancée, Jamie who graduated with a diploma in Biomedical Engineering



EXCUSE ME, ARE YOU A PILOT?

The "Aeronautical Science" option offered by the Diploma in Aviation Management & Services (AMS) allows students to take flying lessons as part of their diploma curriculum



The "Aeronautical Science" option offered by AMS has produced its first flying graduates – John Paul Goh and Ng Wei Liang. This option allows students to take flying lessons at the Singapore Youth Flying Club (SYFC) as part of their diploma curriculum, in addition to subjects such as Flight Planning, Air Navigation and Meteorological Studies.

A flying course usually costs up to \$36,000, whereas "Aeronautical Science" option students pay only an admin fee of \$80.

"It is an awesome option for those who aspire to be a pilot, whether with a commercial carrier or with the SAF," assessed AMS Course Manager, Mr Paul Yap.

John and Wei Liang were among 7 students from the School of Engineering who received their "wings" – a Private Pilot Licence (PPL) – at an SFYC presentation ceremony held on 11 May '13.

But it's not as easy as it sounds. "We had to pass 6 rounds of exams, complete 10 simulator flights, and chalk up 46 flights within a year," recalled John, who graduated with an AMS diploma in May 2013.



REGATTA CHAMPIONS!

The School of Engineering welcomed about 1,800 new students with an Orientation held on 18 & 19 Apr '13, giving the Freshies a taste of the enriching and happening life awaiting them.

In the Grand Finale incorporating the Temasek Regatta – a dragon boat race – held at the Bedok Reservoir, energetic Engineering students clinched the elusive overall Championship crown.



The Engineering girls' team edging out their closest rivals from Business in a nail-biting finish



Ecstatic Engineering students celebrating their championship win



Deputy Principal, Mrs Lay-Tan, presenting the championship trophy to Engineering School





WHEN dreams COME TRUE

Students from the Diploma in Aviation Management & Services (AMS) took about 20 students with special needs from the Mountbatten Vocational School (MVS) to visit the Singapore Youth Flying Club (SYFC) on 15 Jun '13. Two AMS students report.

By Reuben Moey & Ray Quek (AMS)



Some dream of becoming a pilot. While others would be ecstatic just to be able to touch an aircraft.

We are glad we had the chance to bring these youths to the SYFC. We took them into the cockpit of the "Diamond DA40" aircraft and shared with them our knowledge about the switches and how a pilot would use the control stick. Most of them have never got near a real aircraft before. So you can imagine their joy at being able to sit in the cockpit and play with the controls!

Thereafter we brought them to catch a glimpse of the airside of Seletar Airport where various aircraft were taking-off and landing. The sight of the youths standing

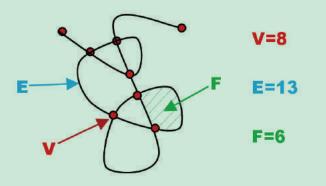


by the fencing with fingers gripping the grills, the wind from the aircraft's propellers engulfing their faces... was indeed a heartwarming Kodak moment.

Being with these youths for a day has made us realise that we should really appreciate every little thing that we have in life.

FIGURE IT OUT ... AND WIN A LIMITED EDITION WOODEN THUMB-DRIVE

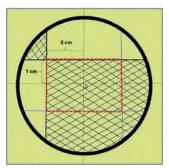
Close your eyes and draw a doodle, such as shown below. Define V as the number of points, E as the number of line segments and F as the number of enclosed regions. Come up with a mathematical equation relating V, E and F, using their given respective values, which holds true for any random and complex doodle.



This contest is open to secondary school and ITE students only. Email your answers, with name, school, and HP number, to: <u>cheeseng@tp.edu.sg</u> with the subject title, **"Engineerrus Maths Puzzle 5"**.

The first 10 correct entries drawn <u>after the closing date (1 December 2013)</u> will each win a limited edition hand-crafted wooden thumb-drive.

ANSWER TO QUIZ #4



The shaded and unshaded areas cancel each other out. Hence, net result is a 4cm x 2cm rectangle (enclosed in red) of area 8cm².

Winners:

Anna Claudia Yenardi (Anderson Sec), Castro J.R. Pedroche (Dunearn), Han Jin (Nan Chiau), Justin Lu Yu Zhou (St Andrew's), Ly Peng (Riverside), Muhd Idris Ad Dandarawi (Ahmad Ibrahim), Sandy Liman (Guangyang), Stephen Alvin (Gan Eng Seng), Tan Keng Iuan (Clementi Town), Wong Ho Chuan (St Gabriel's).

SHOWERS OF BLESSING

You step into the bathroom after a long tiring day, strip, switch on the water heater and turn on the tap, expecting a warm soothing shower. But a blast of cold water spurts at you!

You would have to allow the water to flow for a minute until it reaches the ideal temperature, before starting your shower – thereby wasting at least 10 litres of water.

The "Aqua Saver Shower System", invented by 3 students from the Diploma in Business Process & Systems Engineering, eliminates this water-wasting practice.

If the temperature of the water is outside a pre-specified range (e.g. 35 - 40 °C), the system automatically diverts it back into the water heater, thereby saving precious water. When the ideal temperature is reached, the shower starts to flow. Conversely, if the residual water inside the heater is too hot, the shower will not flow, hence preventing you from being scalded.

A specific volume of water can also be programmed for each shower session, and a buzzer will beep once

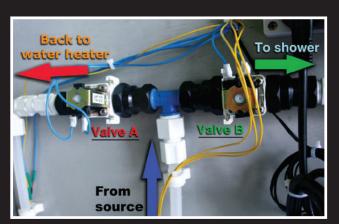


The water savers (from left): Rebecca, Qiu Ping and Tsz Tsam

that amount of water has been discharged, thereby reminding you that it's time to end your shower!

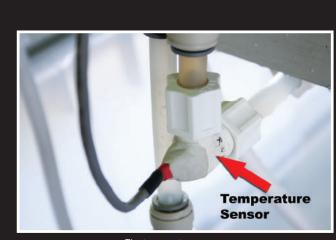
How it works

When the temperature sensor detects that the water is either too hot or too cold, it opens Valve A and shuts Valve B, thereby diverting water back into the heater. However, if the water is within the desired temperature range, the system shuts Valve A and opens Valve B, allowing water to flow through the shower.

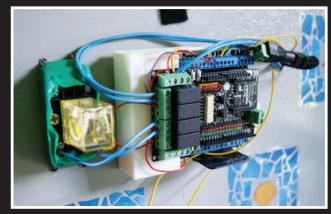


The dual valve system





The temperature sensol



A propeller measures the volume of water passing through

The electronic brain of the shower system

A TALE OF TWO SISTERS

Twin sisters **Syahirah** and **Syahidah Rostam** both graduated with a Diploma in Business Process & Systems Engineering in May 2013.

Both were from East Spring Sec School. Both were in the TP women's soccer team. Both are now pursuing a degree in Sports Science & Management at NTU. While waiting for admission, both had worked as Sales & Marketing Managers at the Fandi Ahmad Football Academy, helping to promote women's soccer.

Physically, they look like a photocopy of each other, invariably giving their friends and lecturers a headache in indentifying who's who. Even pronouncing their names can be a challenge – they both sound alike!

"We used to have different hairstyles so friends could still tell us apart. But when we started to wear head scarves, everyone became confused!" recalls Syahidah. "So we decided that our head scarves should also have a different design," she adds with a laugh.

Even their taste for guys is identical. Syahidah and Syahirah are dating another pair of identical twins – Adib and Aniq Sharhan – also TP students who graduated with a Diploma in Electronics in 2011. "God willing, we are going to have husbands who look alike too," grins Syahirah.

But that's where their similarity ends.

Syahirah is a fan of Paul Scholes and her favourite team is Manchester United. Her twin sister, however,



supports Arsenal and adores Robin van Persie. But Van Persie now plays for Manchester United, so somehow, somewhere, the twin sisters are still linked!

Syahirah remembers the most memorable goal she scored for the TP women's team – a 30-metre scorcher from outside the penalty box, in true Paul Scholes fashion – which helped TP to beat Nanyang Polytechnic 3-0 in an inter-polytechnic match in September 2012.

But why their love for soccer? "Because soccer teaches us many lessons in life," explains Syahirah. "In soccer, if you get a yellow card, you better heed the warning and don't make another mistake. Similarly, in life you often get just one chance," she animates.



BEAUTY AND THE **Brains**

"We only live once, so we should try out as many things as possible," believes Chew Jia Min. That philosophy in life has taken her right to the top.

Graduating from the Diploma in Aviation Management & Services (AMS) with a cumulative grade point average (CGPA) of 3.89 in 2010, she went on to achieve a Bachelor of Business (Marketing) with 2nd upper Honours from NTU.

The demure former Hougang Sec School student then burst into the limelight when she won the Miss Singapore International beauty pageant in July 2013, earning the right to represent Singapore at the Miss International world finals in Okinawa, Japan, in November. Incidentally, she also won the Miss Body Beautiful award.

Despite her astounding success, the 1.75m tall AMS beauty queen humbly remembers her former lecturers at TP: "The care and concern shown by my AMS lecturers - I don't think you can get that elsewhere," she reflects.

The 23-year-old K-Pop lookalike talks about her new found fame:

- Q What is your secret for winning the Miss Singapore International title?
- A I believe it's my easy going personality and determination.
- **Q** What were the segments in the beauty pageant?
- A Broadway dance number, swimwear, evening wear, and a Q&A segment with a 1-minute speech.
- Q Which segment did you find the most challenging, and why?



- A Oh... the evening wear segment! Our gowns had really long trains which make walking with elegance and poise a real art!
- **Q** What question were you asked in the Q&A segment?
- A I was asked: "You look like a Korean, so if you represent Singapore on the world stage, how would you prevent a mix-up between Miss Singapore and Miss Korea?"
- **Q** So what was your answer?
- A I'll speak Singlish lah! So easy also don't know! Well, on a serious note, it's not the way we look but our culture that makes us Singaporean.
- **Q** What advice would you have for aspiring beauty aueens?
- Be ready to accept constructive criticism so as to Α improve yourself. Most importantly, just be yourself!







Sec 3 English teacher, Mrs Ang

BYTE-SIZED LEARNING

The next time you're in the School of Engineering, check out the revolutionary award-winning "Learning Corridor".

Located at Level 6, Block 11, the corridor has interactive notice boards equipped with capacitive proximity-touch sensors that can sense a person's touch. By touching the glass panels of the notice boards, you can play with the Binary Clock which challenges you to interpret the time shown in binary code, the BIN to HEX number converter which tests your binary to hexadecimal number conversion skill, or the "GPA Predictor" game which "predicts" your academic GPA (grade point



average) based on your score in a quiz about Electronics fundamentals. There is also an app that allows you to change some settings and see how it affects the voltage output at various points in a circuit.

This project aims to demonstrate that learning can take place, in bite sizes, even in mundane corridors in the school.

Developed by a team from the Electrical & Electronic Engineering Programme, the project won the TP Educational Innovation Award (EIA), to be presented at a ceremony on 25 Sep '13.

SCHOOL OF ENGINEERING DIPLOMA COURSES



COURSE ENQUIRIES

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- Integrated Facility Management
- Mechatronics
- Media & Communication Technology
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- Common Engineering Programme
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