

Media Release

Nurturing youth to engineer the future of Singapore

Engineering@Polys 2014 aims to stimulate students' interest in science, mathematics, design and technology through real-world Engineering applications

SINGAPORE, 2 September 2014 – Using a wind turbine to power household devices. Supply chain management of a blogshop. Putting together an audio amplifier. These are some of the activities that secondary school students can look forward to in this year's edition of Engineering@Polys 2014. Singapore's five polytechnics - Nanyang Polytechnic (NYP), Ngee Ann Polytechnic (NP), Republic Polytechnic (RP), Singapore Polytechnic (SP) and Temasek Polytechnic (TP) - have put together a four-month long programme showcasing engineering as an attractive discipline with diverse career opportunities.

Supported by the Ministry of Education, the joint-polytechnic programme, held from July to November this year, will help secondary school students associate what they have learnt in the classroom – in subjects such as Science, Mathematics, Design and Technology - with real-world engineering applications.

Asia's robust economic growth has led to an increased demand in several sectors such as infrastructure, energy, refined products, chemical, building and construction. The developments underpin the increased demand for engineering professionals. In the built environment sector, for example, the Building and Construction Authority (BCA) expects construction activities to remain buoyant and sees strong prospects for engineering graduates joining the sector. "The built environment sector is experiencing transformative changes with the push for greater adoption of advanced and productive technologies. Coupled with the sustained sectoral growth beyond 2030, the sector offers many exciting opportunities and meaningful careers for engineers to contribute towards shaping the built environment for all to live, work and play in," said Mr Neo Choon Keong, Group Director of the Manpower and Strategic Policy Group, BCA.

"Science and technology are integral parts of many businesses today. Engineers are well sought after by the industry as they play an important role in propelling business growth through innovation and critical thinking. By advocating the fun behind the science through Engineering@Polys' calendar of activities, we hope that students will see the excitement and potential of an education in engineering and encourage them to consider careers in this field," said Mr Seto Lok Yin, Chairman of the Steering Committee for Learning Engineering at Polytechnics (LEAP) and Deputy Principal (Industry Services), Republic Polytechnic.

The flagship event of Engineering@Polys, Engineering Discovery 2014 will be held on 16 October at Ngee Ann Polytechnic and will showcase interactive science and design exhibitions, to offer students insights into how engineering is a part of everyday living.

This year's programme includes something for the teachers as well. They will be led on immersive learning journeys to find out how engineering and innovation drive the success of companies, such as Cisco Systems, Intelligent Transport System Centre, MAJ Aviation and Jet Aviation. Please refer to appendix below for detailed programme list.

To provide real-world opportunities for students to better appreciate the applications of Mathematics and Science, interactive workshops will be held from July through November. Students can also look forward to the Engineering & Science Challenge where teams of three will pit against one another to build an energy-efficient model car.

The joint-polytechnic initiative to promote engineering as a discipline first began in 2004 and has since achieved significant success in reviving student interest. In recent years, the joint efforts among the polytechnics have connected Singapore students to engineering through its everyday-life relevance and societal impact.

About Nanyang Polytechnic

Established in 1992, Nanyang Polytechnic (NYP) is a premier tertiary institution that offers quality education in Engineering, Information Technology, Design, Interactive & Digital Media, Chemical & Life Sciences, Business Management and Health Sciences. It offers 50 full-time diploma courses and a suite of post-diploma and customised courses for continuing education.

The Polytechnic's industry-relevant and real world-based training equips students to become employment-ready upon graduation. It aims to nurture students into innovative and enterprising individuals, capable of succeeding in any path they choose to take, be it a career or in further studies.

Nanyang Polytechnic is also the proud recipient of the prestigious Singapore Quality Award, the Innovation Excellence Award and the People Excellence Award. This makes NYP the first education institution in Singapore to receive these three top organisational and business excellence awards.

About Ngee Ann Polytechnic

Inaugurated in 1963 as Ngee Ann College with only 116 students, Ngee Ann Polytechnic is today one of Singapore's leading institutions of higher learning with more than 16,000 full-time students, about 2,000 part-time students and an alumni community of over 140,000.

The polytechnic offers 49 full-time courses through its nine academic schools - School of Business & Accountancy, School of Design & Environment, School of Engineering, School of Film & Media Studies, School of Health Sciences, School of Humanities & Social Sciences, School of InfoComm Technology, School of Interdisciplinary Studies, and School of Life Sciences & Chemical Technology. Ngee Ann also supports Continuing Education and Training (CET) through its CET Academy which offers a wide range of part-time programmes.

Learning takes place amid a caring and conducive environment with top-notch facilities ranging from broadcast, multimedia and animation studios to research laboratories as well as simulation and technology centres. With our emphasis on broad-based learning, global exposure and character development, Ngee Ann Polytechnic's vision is to prepare graduates with a passion for learning, values for life and competencies to thrive in a global workplace.

For more information, please visit www.np.edu.sg.

About Republic Polytechnic

The first educational institution in Singapore to leverage the Problem-based Learning approach for all its diploma programmes, Republic Polytechnic (RP) has six schools and two academic centres offering thirty-nine diplomas in Applied Science, Engineering, Enterprise and Communication, Events and Hospitality, Infocomm, Sports, Health & Leisure, and Technology for the Arts.

Republic Polytechnic is committed to nurturing innovation and entrepreneurial learning in an environment that develops problem-solving skills and lifelong learning opportunities. Its holistic and broad-based curriculum prepares students for an active and meaningful role in society as problem solvers, respected professionals and passionate citizens.

Republic Polytechnic strives for excellence by achieving various international and national accreditations, including ISO 9001, ISO 14001, OHSAS 18001, ISO 22301, Singapore Quality Class, People Developer, Innovation Class, and Service Class.

For more information, visit <http://www.rp.edu.sg>

About Singapore Polytechnic

Established in 1954, Singapore Polytechnic (SP) is Singapore's first polytechnic. It has 10 schools that offer 49 full-time diploma courses for close to 16,000 students. SP has adopted a proven creative teaching and learning framework and it offers students a holistic, authentic and industry-relevant curriculum, innovative and vibrant learning spaces, and enriching overseas programmes.

The Polytechnic is committed to producing competent and versatile graduates, who are also imbued with sound values, so that they can be work ready, life ready and world-ready. Among the network of more than 170,000 SP alumni are successful entrepreneurs, top executives in multinational and public-listed corporations, and well-known professionals across various industries and leaders in government.

SP is the first polytechnic to be awarded the President's Award for the Environment in 2010 and the President's Social Service Award in 2011.



Follow us on Facebook at <http://www.facebook.com/singaporepolytechnic> or Twitter at <http://twitter.com/SingaporePoly>.

About Temasek Polytechnic

TP is a significant contributor to the field of para-professional education in Singapore. TP currently offers 52 full-time diploma courses in the areas of applied science, business, design, engineering, humanities & social sciences and informatics & IT. It also offers over 20 part-time courses, up to the advanced diploma level. TP students undergo a holistic learning system that combines hands-on experience, character education and relevant life skills, in an enriching learning environment. The polytechnic has also infused global realities into its programmes and developed a mindset on campus that embraces socio-cultural diversity. These approaches ensure that TP graduates are economy relevant, future relevant and life relevant. For more information, please visit www.tp.edu.sg.

Media Release by Republic Polytechnic

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APPENDIX

KEY ACTIVITIES SCHEDULE

Please visit <http://www.engineering.edu.sg/> for more information



Engineering Discovery

- Engineering Discovery – 16 Oct 2014
- Time : 12:30 - 2:00 pm (Exhibits and Roaming Performance)
: 2:00 - 4:00 pm (Celebratory Ceremony)
- Venue : Ngee Ann Polytechnic MusicBox

Programme Highlights

- Interactive Exhibits in a Carnival-like Atmosphere
- Engaging Talks by Guest Speakers
- Magic Performances
- Awards Presentation for Engineering & Science Challenge Finals

Engineering and Science Challenge

- Theme - "*Use of energy efficient technologies in transportation*"
- Challenge - Design and build a light weight, elegant and energy-efficient remote controlled car to travel a designated path/terrain requiring at least one change/charge of battery
- Two Rounds of Competition
 - Preliminary Rounds - 13 and 14 Oct 2014
Venue: Singapore Polytechnic
 - Finals - 16 Oct 2014
Venue: Ngee Ann Polytechnic

- Teams will also put up a 2 min video of their cars in action explaining how their remote control car works^{*new}

Engineering Career Promotion

- Learning Journeys for Teachers
- Parents Forum
 - For parents to find out more about how Engineering is taught in the polytechnics, and the career pathways awaiting Engineering graduates

When: Saturday, 15 Nov 2014

Session 1: 10:00 am – 12noon (Light Buffet Lunch)

Session 2: 1:30 pm – 3.30pm (Afternoon Tea)

Where: HDB Hub Convention Centre, Punggol Room
HDB Hub, Basement 1, 480 Lorong 6 Toa Payoh,
Singapore 310480

- Customised Workshops for Students
 - A total of 17 interactive Engineering@Polys workshops will be offered to secondary school students till Nov 2014

Date/Time*	Workshop Title/Synopsis	Organiser
14 Jul 2014 9am-5pm	<u>E1 Circuit Challenge</u> This event consisted of two competitions: Electrifying Connections or Indoor Solar Racer. Students put their brains to the test by wiring a series of increasingly challenging electrical circuits OR put engineering principles into practice as they designed, constructed and raced a small, solar-powered car.	Ngee Ann Polytechnic
July to Nov 2014 9am to 11am or 3pm to 5pm	<u>Renewable Energy - Feel It!</u> The participants will learn how to harness solar energy to drive a fan and also learn how to make a wind turbine and capture the wind power to light up LEDs lights	Singapore Polytechnic
July to Aug 2014 9am-11.30am	<u>The ARCH and Aircraft Simulator</u> Students will be shown The ARCH hangar, the Virtual Aerodrome Simulator and the A320 Flight Simulator.	Republic Polytechnic

30 Jul 2014 9am-5pm	<u>AeroChallenge</u> Amazon might not be able to make deliveries using drones for a few years yet – but this challenge gave students the chance to do something similar! They designed and built a system that allowed a drone to carry a package through an obstacle course.	Ngee Ann Polytechnic
Aug to Sep 2014 2pm-5pm	<u>Fun With Gliders</u> The simplest form of an airplane is a glider which is unpowered (or without a motor). Gliders are amazing and graceful when they glide and soar like birds. The same design and aerodynamic factors that affect airplanes also apply to gliders. This workshop will provide you with basic knowledge of flight theory and aerodynamics via a hands-on session during which you will build and launch your very own glider.	Temasek Polytechnic
Sep 2014 2pm-5pm	<u>Build Your Own Musical KeyBoard</u> Discover how the Musical KeyBoard can be built using simple electronic components and experience building one yourself. Also, you will be able to customize the tone of sound and play your own unique Musical KeyBoard. Students will be introduced to prototyping platform and will be able to appreciate the usage of microprocessor to control and customized functions of electronic systems/gadgets.	Nanyang Polytechnic
Sep 2014 9am-11.30am	<u>Blog-shop, Sourcing and Inventory Management</u> Students will learn how to manage a small online shop, from creating a blog shop, to procuring and transporting the merchandise, to managing the physical inventory.	Republic Polytechnic
17 Sep 2014 9.00am to 12.00pm	<u>Assembling fuel cell car and have fuel cell car race (4 sets)</u> 1. Assembling fuel cell car and have fuel cell car race 2. Concepts: Electrolysis, chemical reaction, kinematics, Electricity, Speed of reaction, Redox	Singapore Polytechnic

	<p>3. Participants will learn how to assemble and test run fuel cell car. The various science concepts involved in the fuel cell car will be covered. A simple competition can be conducted among the various groups</p>	
<p>17 Sep & 24 Sep 2014 9.30am to 12.30pm</p>	<p><u>Are U Smarter than Newton?</u> This session aims to introduce Newton's Law of Motion in a fun and engaging fashion. Students will be working in groups to discover, experience and apply Newton's Law of Motion. Participants are expected to conduct online research, present their findings and reviews, perform measurements using apparatus provided, analysing data, correlating to theories, and draw conclusions to the problem statement.</p>	<p>Singapore Polytechnic</p>
<p>Sep to Oct 2014 2pm-5pm</p>	<p><u>Introduction to 3D Printing</u> In this 3-hour workshop, we will excite you with the magic of 3D printing – the technology that everyone is talking about today! This workshop will bring you on a fun journey that starts from learning about the history of 3D printing to experiencing – first hand – the exciting process of 3D printing. You will create an object with the 3D printer, and get to bring home your hand-made creation. Along the way, you will also learn the fundamentals of CAD (Computer-aided design).</p>	<p>Temasek Polytechnic</p>
<p>Sep to Oct 2014 2pm-5pm</p>	<p><u>Physics Show & Tell: Electricity and ElectroMagnetism</u> This workshop will provide GCE 'O' level students with fundamental knowledge of Electricity and Electromagnetism. It is conducted using an interactive "Show & Tell" approach that enhances your understanding of the subject matter and gives you the opportunity to learn through experiment.</p>	<p>Temasek Polytechnic</p>

<p>25 Sep 2014 2pm-5pm</p>	<p><u>Engineering of Mixing in Water Matrix</u> The workshop will demonstrate 2 different mixing purposes and the application in the industries i.e. colloids mixing to stabilise in food industry and colloids mixing to destabilise in water treatment. Turbid water will be mixed with coagulant to destabilise it during jar test experiment. In a different case, making mayonaise will be used as an example of stabilising colloids in water matrix.</p>	<p>Singapore Polytechnic</p>
<p>Sep to Nov 2014 2pm-5pm</p>	<p><u>Green Building Trail @ TP</u> This workshop will provide you with knowledge of the fundamental concepts of Green Buildings. You will be introduced to the green features of a building through an interactive media, after which you will play a game to enhance and test your understanding of Green Buildings. Finally, you will visit our campus South Wing Building which was awarded the “Green Mark Platinum” award, to view for yourself a real life example of a Green Building.</p>	<p>Temasek Polytechnic</p>
<p>15 Oct 2014 9am-5pm</p>	<p><u>Bull’s Eye Competition</u> Strategy, teamwork and creativity – students will need all these to win this competition. Working in teams, they will design and build a sophisticated robot to accomplish the mission specified. In the process, they will learn about automation and mechatronic systems.</p>	<p>Ngee Ann Polytechnic</p>
<p>17 Oct 2014 9am-5pm</p>	<p><u>The Maze Solving Mouse</u> The Maze Solving Mouse has been developed by Nanyang Polytechnic as a pedagogical platform for students to learn intelligent electronics technologies encompassing artificial intelligence, motor control, sensors and micro-controller. Come and see how all these intelligent electronics technologies are harnessed together so that a small autonomous vehicle can navigate and solve an unknown maze on its own.</p>	<p>Nanyang Polytechnic</p>

<p>17 Oct 2014 9am-5pm</p>	<p><u>Vortex Ring Air Cannon</u> Come and join us in a fun filled workshop to design and make a vortex ring air cannon which consists of a cylindrical bucket with a flexible membrane over its opening. If filled with smoke, the vortex ring cannon can generate visible air vortex rings when its membrane cover is tapped. Students will learn the principles of fluid dynamics and air turbulence relating to the phenomena of the vortex rings.</p>	<p>Nanyang Polytechnic</p>
<p>Oct to Nov 2014 2pm-5pm</p>	<p><u>Physics Hands-On: Sound & Audio Amplifier</u> Tired of listening to music through your earphones? In this workshop, you will learn basic concepts of sound, which is part of the 'O' Level Physics syllabus. You will also build your own audio amplifier which you can connect to a speaker. In addition, you will learn some basic electronic prototyping skills useful for your D&T subject. And you get to bring home the audio amplifier that you created, as well as a free speaker too! Just plug it into your MP3/MP4 player and music will surround you!</p>	<p>Temasek Polytechnic</p>