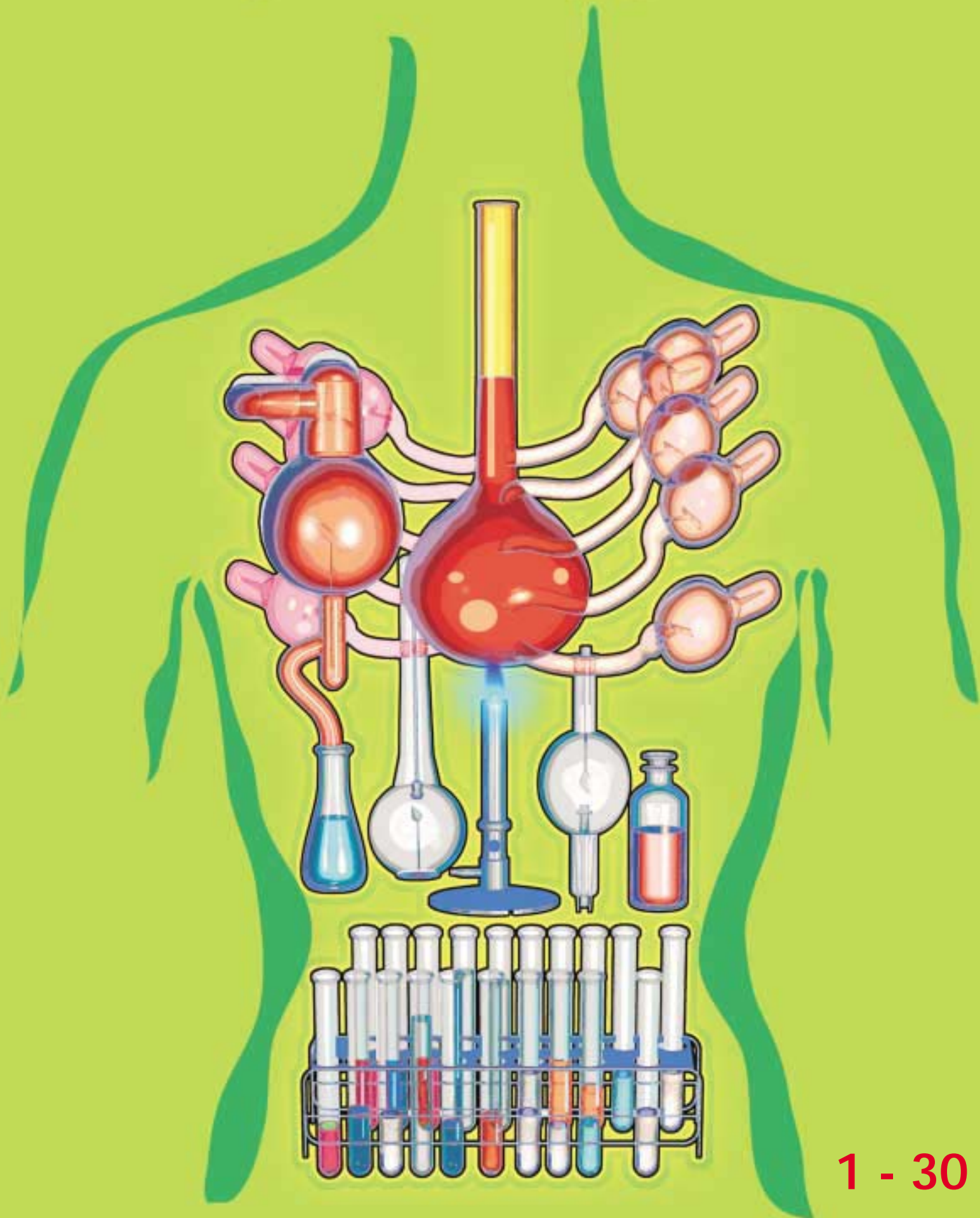


# science.04

a month of Science, Technology and Biomedicine

## LIVE SCIENCE!

Change the way you live.



1 - 30 Sept

Organised by



Agency for  
Science, Technology  
and Research



[www.sciencemonth.org.sg](http://www.sciencemonth.org.sg)



Carnival



Workshop



Science Show



Exhibition



Edutainment



Talk/Seminar



Open House



Competition/Awards

# Welcome to science.04

science.04, also known as Science Month, is an annual high profile national event to celebrate the dynamism of science, technology & biomedicine. With more than 120 activities this September, science.04 is amongst the largest and fastest growing science festival in the region. Held in venues throughout the island, the activities and events not only share the excitement of science with the public but also highlight the impact made by science and technology on our daily lives.

This year's theme of Live Science! serves to deliver the message that science encompasses all disciplines and that it should be experienced and not simply restricted to the textbook. So, come and discover science and change the way you live!

(Details of the programmes are accurate at the time of print, but interested parties are advised to check with the relevant organisations for any changes.)



# Highlight 1-30 Sept

## National Science & Technology Awards Dinner 2004

15 September

**Venue:** Waterfront Copthorne  
**Target:** Science & Technology Leaders from Industry & Research, and Research Scientists and Engineers  
**Pre-Registration:** By Invitation Only  
**Organiser:** A\*STAR  
**E-mail:** a-star\_contact@a-star.edu.sg

This prestigious annual event is the occasion where the National Science and Technology Awards (NSTA) will be presented to outstanding research scientists and engineers in recognition of their major contributions in basic research, applied R&D and to the development and management of R&D in Singapore.



## X-periment! -PERIMENT!

3 - 5 September

**Time:** 1pm - 9pm (3 Sept)  
11am - 9pm (4 & 5 Sept)  
**Venue:** Suntec City Entertainment Centre (outside Carrefour), Suntec City  
**Target:** Public  
**Pre-Registration:** No  
**Fee:** No Charge  
**E-mail:** upstream@science.edu.sg

X-periment!, a three-day science carnival celebrates the latest developments and research works in the field of science and technology. Visitors will be greeted with the latest innovations and experiments by local researchers. There will also be "sci-sational" hands-on experiments, quizzes and games. Come and be entertained by our "Cool! Musical Instrument" science shows and you will discover that science is truly "FUN-tastic".



## Kids Science Fest!

15 - 21 September

**Time:** 10am - 6pm  
**Venue:** Annexe Building, Singapore Science Centre  
**Organiser:** A\*STAR and Singapore Science Centre  
**Target:** Ages 6 & above and Families  
**E-mail:** upstream@science.edu.sg

Exciting science for all kids! More than 20 brilliant activities and exhibits for you to take part in to understand why people find science, experimentation and invention so fascinating! Feed Your Blast into "Space", explore "Your Body", challenge yourself to "Mind Boggling Puzzles", put yourself in the shoes of a forensic scientist, an aspiring palaeontologist, or perhaps a determined engineer! Your science adventure starts here! Join us in the ultimate party with our "Party Science" shows performing daily with a lot of "oohs" and "wows"!



## National Junior Robotics Competition

4 - 11 September

**Venue:** Annexe Building, Singapore Science Centre  
**Target:** Upper Primary & Lower Secondary Students  
**Pre-Registration:** No  
**Fee:** No Charge  
**E-mail:** njrc@science.edu.sg

Come and witness pure passion at play. NJRC is a major national robotics event. The competition challenges students from Upper Primary and Lower Secondary to assemble and programme the ultimate robot that can out-perform other robots in the competition. This year's theme of Jocara Indian Ocean Expedition feature a series of missions based on actual events of Dr John Potter's expedition in the Indian Ocean. The challenge will also be based on topics relating to the research conducted at the various stops in the expedition. This year's challenging theme will guarantee the 853 teams yet another fierce competition at the playing field!



## The Singapore Sci-Fi Festival

24 - 26 September

**Time:** 3.30pm - 6.30pm (Sci-Fi Carnival)  
24 Sept: 7pm onwards  
25 & 26 Sept: 7.30pm onwards (Sci-Fi Movie Screening)  
**Venue:** Orchard Green (grass patch behind Orchard MRT)  
**Target:** Public and Families  
**Pre-Registration:** No  
**Fee:** \$10 per night for movie screening.  
No fee for carnival  
**E-mail:** upstream@science.edu.sg

It's back again! The Singapore Sci-Fi Festival calls all sci-fi movie buffs out there! Picnic under the stars and emerge yourself in an alternate reality. Dress up in a sci-fi theme, get spotted by our Space Commander and win prizes! Launch your mini rocket, zap some aliens, and catch our Spacey Science Show at the carnival. Explore the final frontiers, where science is limited only by your imagination, where the impossible can be made possible. Don't miss the fantastic line-up of outdoor screening from the best sci-fi movies; Matrix Trilogy, T3 and Spiderman 1. For the kids, there's Spy Kids 2 & a special edition of 3D version of Spy Kids 3! Not to worry, 3D glasses will be provided!



## Gene-Fest!

15 - 21 September

**Time:** 10am - 6pm  
**Venue:** Annexe Building, Singapore Science Centre  
**Target:** Ages 6 & above and Families  
**Organiser:** A\*STAR and Singapore Science Centre  
**E-mail:** upstream@science.edu.sg

Come on down and explore your genes with us! Challenge yourself in an attempt to build the bases of life in Towers of DNA and find out about gender and genetic disorders as you match the set of human chromosomes in The Great Chromosomes Wall. Our Incredible Protein Machine will show you how DNAs make proteins and Rings of Change is an exciting simulation game that shows the change in destiny of a bacterial cell! While you're here, do join us in the exciting science show, The Basic Building Blocks of Life.



## Images of Science - Digital Imaging Competition

**Target:** Public  
**Pre-Registration:** www.sciencemonth.org.sg (to download application form)  
**Fee:** No Charge  
**E-mail:** upstream@science.edu.sg

Images of Science returns to celebrate the dynamism of science, technology & biomedicine. This competition uncovers the artists in scientists and brings out the scientists in artists. This year, Images of Science shares the theme of science.04: Live Science! and challenges participants to share their vision on how science will change the way we live in the future. This competition accepts both individual and group entries and is open to participants of all ages. Winning images will be used for future science month.



## Digi Science Trails

Throughout September

**Time:** 11am - 5pm  
**Venue:** Singapore Science Centre - Corridor of Science News  
**Target:** Public  
**Organiser:** A\*STAR & Singapore Science Centre  
**Pre-registration:** No  
**Fee:** No Charge  
**Contact:** Brandon Lee  
**E-mail:** bsw\_lee@science.edu.sg

Quiz month is back at the Corridor of Science News! Look out for those giant plasma screens and challenge yourself to find the right answers to a pack of sizzling science quizzes, from perception, genes, space and more! Win great prizes while you explore the wonders of science! A series of interesting surveys on genetic traits are also available for your participation. The theme of the quiz changes every fortnight. Don't forget to ask for a contest form!

# science.04

Special events to pique the interest of budding students...



## Cool! Musical Instruments!

30 August - 2 September

**Time:** 10.30am & 2.30pm (2 Shows Daily)  
**Venue:** Annexe Building, Hall 1, Singapore Science Centre  
**Target:** Upper Primary & Secondary Students  
**Organiser:** A\*STAR & Singapore Science Centre  
**Fee:** No Charge  
**Pre-Registration:** Yes  
**Contact:** Susan Chang  
**Tel:** 6425-2500  
**E-mail:** snc\_chang@science.edu.sg  
**Fax:** 6561-6361

Find out how vibrations make sound, how fast they have to go to hear everything and be part of giant sound wave. See sound energy bring water to life. Explore the different parts of musical instrument - something that vibrates, something to change the frequency of vibrations and something to amplify the sound. Then play some unusual instruments including the coat hanger, the cup, the bucket, straws and garden hose.



## Early Mammalian Development and the Embryonic Stem Cell

2 September

**Time:** 2.30pm - 3.30pm  
**Venue:** Maxwell Auditorium, Singapore Science Centre  
**Target:** Public, Upper Secondary & Tertiary Students  
**Organiser:** GIS, A\*STAR & SSC  
**Fee:** No Charge  
**Pre-Registration:** Yes  
**Contact:** Jamilah  
**Tel:** 6425-2591  
**E-mail:** upstream@science.edu.sg  
**Fax:** 6561-6361

All mammals form from a single cell, the zygote, after fertilisation of an egg by a sperm. Needless to say a multitude of complex cellular differentiation events occur to generate an adult mammal from this single-celled zygote. This talk will focus on the molecular aspects of the very first cellular differentiation events that occur from the 1-cell to the 64-cell stage of development and the clinical relevance of this to the fields of embryonic stem therapies and assisted reproductive technologies. **Speaker:** Dr Paul Robson, Senior Research Scientist, GIS, A\*STAR.



## 6th Singapore National Crystal Growing Challenge

4 September

**Time:** 9am - 1pm  
**Venue:** NUS Multi-Purpose Hall I  
**Target:** Secondary & Tertiary Students  
**Organiser:** National University of Singapore (NUS)  
**Fee:** No Charge  
**Pre-Registration:** Yes  
**Contact:** JJ Vittal  
**Tel:** 6874 2975  
**E-mail:** chmjiv@nus.eud.sg  
**Fax:** 67791691

The Department of Chemistry at the National University of Singapore and the Singapore National Institute of Chemistry are jointly organising this biennial Singapore National Crystal Growing Challenge for students. This creative and fun-giving crystal growing challenge is aimed at secondary school, junior college and polytechnic students. The challenge gives students the chance to discover the importance of relevant and good techniques in chemistry. By participating in this competition, students will learn the art and science of growing crystals.



## HPC Quest 2004

4 September

**Time:** 8.30am - 6pm  
**Venue:** IHPC, 1 Science Park Road, #01-01 The Capricorn  
**Target:** First Year 'A' Level Students  
**Organiser:** Institute of High Performance Computing (IHPC, A\*STAR) & IBM  
**Fee:** No Charge  
**Pre-Registration:** Yes  
**Contact:** Lim Su Yen  
**Tel:** 6419-1433  
**E-mail:** limsy@ihpc.a-star.edu.sg  
**Fax:** 6419-1430

HPC Quest competition started in 2002 to promote the applications of High Performance Computing technologies in the areas of computational science and engineering in Singapore. Together with IBM Singapore, the Institute of High Performance Computing (IHPC) is launching the Student Category this year to cultivate an interest in HPC technologies amongst the younger generation. Participants will be introduced to computing technology to solve engineering problems, trained on the usage of selected software and be briefed on the problem set.



## Young Scientist Research Day

7 September

**Time:** 9am - 5pm  
**Venue:** IME, 11 Science Park Road, Science Park 2  
**Target:** Secondary School Students  
**Organiser:** Institute of Microelectronics (IME)  
**Fee:** No Charge  
**Pre-Registration:** Yes  
**Contact:** Fanni Tan  
**Tel:** 6770-5335  
**E-mail:** tansq@ime.a-star.edu.sg

Microchips are ubiquitous in electronic devices such as computers, cameras, handphones, PDAs, MP3 players and many other gadgets we use today. In these devices, electricity flows through tiny wires inside microchips to do work for us. We receive the outcome as an image, movie or a sound from the electronic device. However, microchips of future are most likely to deliver more than that. A new type of microchip has been developed by the Institute of Microelectronics (IME) researchers to contain tiny channels for flowing of not electricity but minuscule amount of liquid. This technology is Microfluidics and emerged from Microelectronics.



## Trails & Tales of RIs

10 September

**Time:** 9.30am - 6pm  
**Venue:** Gather at the Singapore Science Centre  
**Target:** Secondary, JC & Polytechnics Students  
**Organiser:** A\*STAR & Singapore Science Centre  
**Fee:** No Charge  
**Pre-Registration:** Yes  
**Contact:** Jamilah  
**Tel:** 6425-2591  
**E-mail:** noorjamilah@science.edu.sg  
**Fax:** 6561-6361

This is an open house event whereby students will get a unique tour of our local R&D installations and a glimpse into the work environment of our researchers and more importantly, the latest developments of R & D in Singapore. Participating A\*STAR Research Institutes include the Institute of Molecular and Cell Biology (IMCB), Singapore Institute of Manufacturing Technology (SIMTech) & Institute of Materials Research & Engineering (IMRE) as they will be opening up their doors so that we may have a peep into their RIs.



## Graduate Student Symposium 2004 - A Chemical Engineering Showcase: Convergence 2004

10 September

**Time:** 9am - 5pm  
**Venue:** NUS Engineering Auditorium, Faculty of Engineering, EA Block, Ground Level  
**Target:** Tertiary Students, Professionals and Public  
**Organiser:** National University of Singapore (NUS)  
**Fee:** No Charge  
**Pre-Registration:** Yes  
**Contact:** Arul Sundaramoorthy  
**E-mail:** g0202101@nus.edu.sg

Get a panoramic view of the current research activities at the Chemical & Biomolecular Engineering (ChBE) Department while interacting with faculty members and graduate students of the department. In addition, create research opportunities and collaborations while identifying the talents that may suit organisations attending the symposium.



## Singapore Statistical Poster Competition Exhibition

14 - 20 September

**Time:** 10am - 5pm  
**Venue:** Annexe Lobby, Singapore Science Centre  
**Target:** Public, Secondary & Tertiary Students  
**Organiser:** Dept. of Statistics & Applied Probability, NUS, A\*STAR, SSC. Sponsored by SAS Institute Inc. No Charge  
**Pre-Registration:** No  
**Contact:** Jamilah  
**Tel:** 6425-2591  
**E-mail:** noorjamilah@science.edu.sg  
**Fax:** 6561-6361

An exhibition of the winning entries of the competition. The Singapore Statistical Poster Competition aims to increase the awareness of statistics and its relevance to scientific research, and to encourage the development of statistical reasoning in students. The competition encourages students to explore creative ways of explaining and displaying data, to practice problem-solving techniques with real world data, and to illustrate conclusions that can be drawn from the data.



# Special Events





# Special Events

## science.04

More special events to pique the interest of budding students...



### Public Lectures: Career in Statistics

16 - 17 September

Time: 2.30pm - 3.30pm  
Venue: Mendel Auditorium,  
Singapore Science Centre  
Target: Secondary, JC & Tertiary Students  
and Teachers  
Organiser: A\*STAR & Singapore Science Centre  
Fee: No Charge  
Pre-Registration: Yes  
Contact: Jamilah  
Tel: 6425-2591  
E-mail: noorjamilah@science.edu.sg  
Fax: 6561-6361

**The Role of a Biostatistician in Clinical Trials**  
Statistics play an important part in medical research. In particular, the incorrect or inappropriate application of statistics in clinical trials can lead to misleading conclusions being drawn about new therapies. This may have potentially dangerous consequences for the patients. The talk will describe the role of a statistician (known as a biostatistician) working in the public sector healthcare environment in Singapore. We will also discuss the part played by statistics in the planning and conduct of clinical trials. Speaker: Dr Tan Say Beng, Head of Biostatistician, CTERU, Senior Biostatistician, National Cancer Centre, Biostatistics Unit Division of Clinical Trials and Epidemiological Sciences. (16 Sept)

#### Numbers Can Talk, but What Exactly Can They Say?

With the advance in technology, quantitative information can be easily obtained from media like newspapers, TV, Internet, etc. Therefore, it is very important that we are proficient in these quantitative information so that wiser and better decisions can be made. In this talk, examples taken from newspapers are used to illustrate how quantitative information should be properly read. Speaker: A/P Chua Tin Chiu, Deputy Head, Dept of Statistics and Applied Probability, National University of Singapore. (16 & 17 Sept)

**Discovery to Market: Statistics Everywhere!**  
The emergence and growth of Biosciences in the last decade had been phenomenal. Statistics and computing continue to play a significant and key role in unravelling several mysteries of science. The contributions of Statisticians to the development of Biosciences and Pharmaceutical industry in particular are very well recognised. This lecture attempts to provide insight into the role, opportunity and demands of a Statistician in a pharmaceutical industry from a practitioner perspective. Speaker: Mr. Raju Krishnamoorthy, Senior Statistician, Technical Development Department GlaxoSmithKline. (17 Sept)



### Open House @ ICES

17 September

Time: 9.30am - 4pm  
Venue: Gather at the  
Singapore Science Centre  
Target: Upper Secondary, JC & Polytechnic  
Students  
Organiser: ICES, A\*STAR & SSC  
Fee: No Charge  
Pre-Registration: Yes  
Contact: Jamilah  
Tel: 6425-2592  
E-mail: upstream@science.edu.sg  
Fax: 6561 6361

The day will start off with a chemical demonstration by Dr Bassam Shakshihiri, well known for his world famous "Science Is Fun" shows followed by tour of ICES labs and facilities with introduction to hydrogen technology, biocatalysis, polymers, oil phase formulation, particle transport in human lung and reaction calorimetry and in situ monitoring.



### "Crystals, Crystals, Tell Me More!"

25 September

Time: 3pm - 3.45pm  
Venue: Singapore Science Centre  
Target: Public, Secondary & JC Students  
Organiser: Data Storage Institute (DSI, A\*STAR)  
& Singapore Science Centre  
Fee: No Charge  
Pre-Registration: Yes  
Contact: Jamilah  
Tel: 6425-2591  
E-mail: upstream@science.edu.sg  
Fax: 6561-6361

The presentation will introduce the crystals in nature, the beauty of crystals, functions and uses of synthetic crystals, etc. A simple method to grow your own crystals in the Sun will be introduced to the audience. Some crystal samples will be exhibited and the observation of optical crystal properties as well as the holographic recording of pictures in the crystal with laser beams will be demonstrated after the presentation. Presenter: Dr Xu Xuewu, Research Scientist from Data Storage Institute, A\*STAR. Dr Xu is an expert with more than 15 years' R&D experience in the field of crystal growth and characterisation. He has accumulated abundant experience and skills in the areas of various functional crystal growth techniques and holographic data storage. Recently, his major research focus is on the development of rewritable holographic recording media and two-colour nonvolatile holographic storage technology.

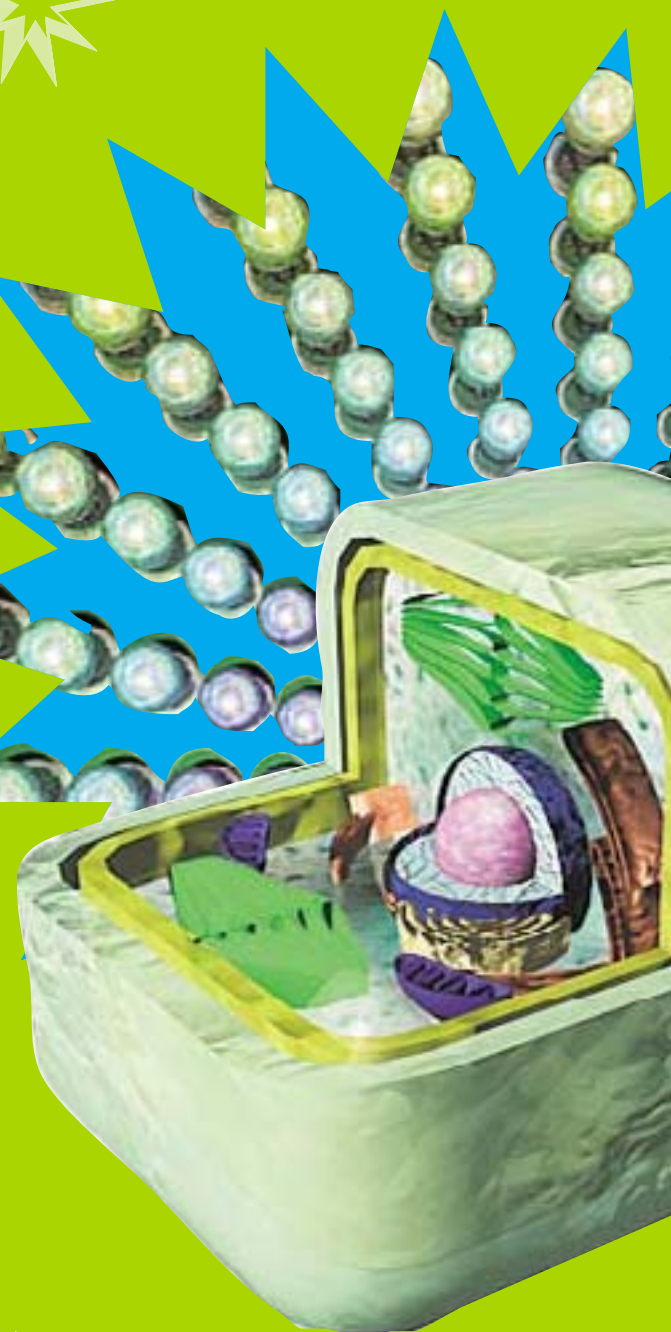


### No More Pain!

25 September

Time: 2pm - 2.45pm  
Venue: Singapore Science Centre  
Target: Public, Secondary School  
& JC Students  
Organiser: Institute of Materials Research &  
Engineering (IMRE, A\*STAR) &  
Singapore Science Centre  
Fee: No Charge  
Pre-Registration: Yes  
Contact: Jamilah  
Tel: 6425-2591  
E-mail: upstream@science.edu.sg  
Fax: 6561-6361

Afraid of doctors armed with needles? Not anymore!! With the advancement of science and technology, painless injections into the body will soon be real. Want to find out more about how it works? Mr Lim Chee Yen, Research Officer from the Institute of Materials Research & Engineering (IMRE, A\*STAR) will be sharing with us some of the latest research work being carried out in the Micro & Nano System cluster.



# science.04

Students, check out what Science has in store for you!



## Biotechnology Fair 2004

2 - 3 September

Time: 9am - 5pm  
 Venue: Ngee Ann Polytechnic  
 Target: Primary, Secondary & JC Students  
 Organiser: Ngee Ann Polytechnic (NP)  
 Fee: No Charge  
 Pre-Registration: Yes  
 Contact: Tang Guek Im  
 Tel: 6460-8107  
 E-mail: tgi@np.edu.sg  
 Fax: 6467-9109

The Biotechnology Fair is an annual event jointly organised by the Singapore Science Centre and Ngee Ann Polytechnic. This year's fair will include a display of secondary school projects, art work from primary schools, a scientific forum and presentations.



## Design Competition for ITE

2 September

Time: 1.30pm - 5pm  
 Venue: Ngee Ann Polytechnic, Mechanical Engineering Division, School of Engineering  
 Target: Tertiary Students  
 Organiser: Ngee Ann Polytechnic (NP)  
 Fee: No Charge  
 Pre-Registration: Yes  
 Contact: Philip Tan Cheng Huat  
 Tel: 6460-6197  
 E-mail: tch@np.edu.sg  
 Fax: 6467-7384

Participants will be required to construct a structure from items provided e.g. Straws, satay sticks etc. within a given time-frame. The structure will be judged for creativity and strength.



## Fun and Interactive Science Experiments with LabVIEW

4 September

Time: 9am - 11.30am  
 Venue: Ngee Ann Polytechnic Block 83  
 Target: Secondary 3 & 4 Students and Physics Teachers  
 Organiser: Ngee Ann Polytechnic (NP)  
 Fee: No Charge  
 Pre-Registration: Yes  
 Contact: Marek Kubis  
 Tel: 6460-6925  
 E-mail: kum@np.edu.sg  
 Fax: 6467-6504

This talk cum demo aims to demonstrate to Secondary 3, 4, 5 students and teachers, fun and interactive ways to learn the basic principles of Science using LabVIEW software and the PC. Schools which sign up a minimum of 2 teachers and 20 students will be given a FREE LABVIEW software.



## Add. Maths. Wizardry!

4 September

Time: 9am - 12.30pm  
 Venue: Temasek Polytechnic/Temasek Applied Science School, LT 5  
 Target: Secondary School Students  
 Organiser: Temasek Polytechnic (TP)  
 Fee: No Charge  
 Pre-Registration: Yes  
 Contact: Alice Au Meen Joo  
 Tel: 6780-6404/6780-5322  
 E-mail: meenjoo@tp.edu.sg  
 Fax: 6782-5498

Students will learn about common mistakes made at the Additional Mathematics 'O' Level Examinations. They will also learn to turn these insights into their personal strengths to improve their application of maths techniques and think more broadly in the subject.



## Carbohydrate Express - Come Aboard Our Biodiscovery Engine!

4 September

Time: 9am - 12nn  
 Venue: Temasek Polytechnic/Temasek Applied Science School, LT 6  
 Target: Secondary School Students  
 Organiser: Temasek Polytechnic (TP)  
 Fee: No Charge  
 Pre-Registration: Yes  
 Contact: Alice Au Meen Joo  
 Tel: 6780-6404/6780-5322  
 E-mail: meenjoo@tp.edu.sg  
 Fax: 6782-5498

Participants will learn about carbohydrate forms and digestion. Taking on the role of sleuths in laboratories, students will investigate why some food taste sweet but may not contain 'sugar'. The concept of homeostasis will also be introduced by studying a carbohydrate metabolic disorder - diabetes. Besides learning how to conduct urine and blood glucose testing, participants will also explore how different classes of medications to treat diabetes work.



## Creative Chemistry - Exploring Acids

4 September

Time: 9am - 12nn  
 Venue: Temasek Polytechnic/Temasek Applied Science School, LT 8  
 Target: Secondary School Students  
 Organiser: Temasek Polytechnic (TP)  
 Fee: No Charge  
 Pre-Registration: Yes  
 Contact: Alice Au Meen Joo  
 Tel: 6780-6404/6780-5322  
 E-mail: meenjoo@tp.edu.sg  
 Fax: 6782-5498

Students will participate in hands-on sessions to investigate the chemical and physical properties of acids. This interactive session will enhance the students' understanding of this group of compounds as they prepare for the 'O' Level Chemistry Examination. The use of organic acids to manufacture certain fragrant and aromatic compounds will also be demonstrated. A fun quiz will be conducted and token prizes will be awarded to winners.



## Wonders of Science

4 September

Time: 9am - 4pm  
 Organiser: Ngee Ann Polytechnic Convention Centre  
 Target: Secondary School Students  
 Organiser: Ngee Ann Polytechnic (NP)  
 Fee: No Charge  
 Pre-Registration: Yes  
 Contact: Tam Kwok-Wing Dennis  
 Tel: 6460-6193  
 E-mail: tkd@np.edu.sg  
 Fax: 6467-1730

This competitions aims to communicate to non-scientists an application or a principle of science and technology and to educate them on aspects, applications and principles of science and technology in a fun way. Each team must go through the 1st round of competition (Heat) which is scheduled in late August 2004. Maximum of 12 teams will qualify for the 2nd round (Finals) of competition which will be held on 4 Sept 2004. Every team participating in the Finals will be awarded a prize. Examples of projects include: Demonstration of the principles of electrostatics using hair combs, cling film and plastic rulers, Building a battery from fruits, Demonstrating Newton's Laws with a pressurised plastic soda bottle, Building a hot air balloon using bathroom curtains.



# Calendar of Events





# science.04

Let the wonders of science amaze you!



## Chemical Engineering Car

4 September

Time: 9.30am - 11.30am  
Venue: Ngee Ann Polytechnic  
Target: Secondary School Students  
Organiser: Ngee Ann Polytechnic (NP)  
Fee: No Charge  
Pre-Registration: Yes  
Contact: Wayne Lee Forday  
Tel: 6460-6747  
E-mail: fwl@np.edu.sg

The seminar will teach students how to design and test a chemical powered car.



## Fun with Analogue Electronics (Fundamentals of Analogue Electronics)

4 - 11 September

Time: 9am - 12nn  
Venue: School of Electrical & Electronic Engineering, Block 12, T12602  
Target: Secondary School Students  
Organiser: Singapore Polytechnic (SP)  
Fee: No Charge  
Pre-Registration: Yes  
Contact: Saira Kuttan  
Tel: 6772-1935  
E-mail: Saira99@sp.edu.sg  
Fax: 6772-1974

Understand, construct and test some simple but useful analogue circuitries. Participants will learn to identify and use some electronic components such as LED, diodes, LDR, resistor, capacitor, transistors, etc. This is a workshop that is spread over 2 half-days (4 & 11 Sept).



## Basic Electronic Circuits

6 September

Time: 1.30pm - 5pm  
Venue: School of Electrical & Electronic Engineering, Block 12, T12602  
Target: Secondary School Students  
Organiser: Singapore Polytechnic (SP)  
Fee: No Charge  
Pre-Registration: Yes  
Contact: Saira Kuttan  
Tel: 6772-1935  
E-mail: Saira99@sp.edu.sg  
Fax: 6772-1974

An easy introduction to electronic circuits, starting from a "nucleus" of the simplest circuit then adding on simple stages to learn how simple electronics function and make an interesting thing that really works!



## Fun with Digital Photography

6 September

Time: 2pm - 5pm  
Venue: School of Electrical & Electronic Engineering, Block 9, T911  
Target: Secondary School Students and Teachers  
Organiser: Singapore Polytechnic (SP)  
Fee: No Charge  
Pre-Registration: Yes  
Contact: Saira Kuttan  
Tel: 6772-1935  
E-mail: Saira99@sp.edu.sg  
Fax: 6772-1974

Participants will learn practical tips on how to improve their photo-taking techniques and image manipulation skills.



## Virtual Combat Robot Game

7 - 8 September

Time: 8.30am - 1pm  
Venue: Ngee Ann Polytechnic  
Target: Secondary & ITE Students  
Organiser: Ngee Ann Polytechnic (NP)  
Fee: No Charge  
Pre-Registration: Yes  
Contact: David Lim  
Tel: 6460-6107  
E-mail: lpi@np.edu.sg  
Fax: 6468-1297

Participate in the game and learn to programme virtual robots to "fight" it out in battles. Participants get to use JavaTM and win attractive prizes at the same time. (JavaTM is registered trademarks of Sun Microsystems, Inc. in the U.S. or other countries.)



## Green Plastics

7 September

Time: 2pm - 4.30pm  
Venue: School of Chemical & Life Sciences, WorkshopW319  
Target: Secondary 3 & 4 Students  
Organiser: Singapore Polytechnic (SP)  
Fee: No Charge  
Pre-Registration: Yes  
Contact: Tay Chin How  
Tel: 6772-1320  
E-mail: chinhow@sp.edu.sg  
Fax: 6772-1976

Plastics are everywhere and of many types. Plastics have made possible major advances in the medical, electronics, and aerospace industries etc. One common area of application of plastics is packaging. We use plastic bags in shopping centres and supermarkets. Disposable plastic plates and cutlery are often used in parties. These items are economical and practical but they pose environmental problem as they take ages to decompose. Such items can now be made from a new breed of environment friendly plastics. They are biodegradable and based on renewable sources. Come to this workshop and we will show you how to make your own biodegradable plastics. You will also learn how plastics are converted into different products by the various processes.



## The Science and Art of Chocolate-Making

7 September

Time: 2.30pm - 4.30pm  
Venue: School of Chemical & Life Sciences, Block 2, T234  
Target: Secondary 3 & 4 Students  
Organiser: Singapore Polytechnic (SP)  
Fee: No Charge  
Pre-Registration: Yes  
Contact: Tan Soon Ann  
Tel: 6870-6129  
E-mail: Tan\_Soon\_Ann@sp.edu.sg  
Fax: 6772-1976

What delightful thing is it in chocolate that makes it so irresistible? Is it just the rich, dark, velvety-smooth, creamy sensation that tempts your palate or is there something more? Discover that for yourself at the Chocolate-making Workshop! Make your very own homemade chocolate with just simple kitchen utensils. Yes, you would be given ample time to do so. Surprise your friends with what you'd gather from the Workshop. Perhaps, the experience and inspiration gained would spur you someday to create your very own locally flavoured chocolate that many would pay for.



## Machines Smaller Than the Size of A Pollen Grain

7 September

Time: 12.30pm - 2pm  
Venue: Republic Polytechnic, Library  
Target: Public, Secondary & Tertiary Students, Professional  
Organiser: Republic Polytechnic (RP)  
Fee: No Charge  
Pre-Registration: Yes  
Contact: Cindy Chua  
Tel: 6319-3430  
E-mail: cindy\_chua@rp.edu.sg  
Fax: 6415-1310

How can machines smaller than the size of a pollen grain be fabricated? What are the functions of such tiny machines? The talk will cover what micromachines are, their applications and the way they are designed and fabricated on a silicon chip using special fabrication techniques.



# science.04

Brighten up your month of September with these activities!



## D.I.Y. Heart Rate Detector

8 September

**Time:** 9am - 12nn (Session 1)  
1pm - 4pm (Session 2)  
**Venue:** Biomedical Engineering Technology Centre, Blk 8, Level 3, Rooms 3 & 4 (#08-03-03, #08-03/04)  
**Target:** Secondary School Students  
**Organiser:** Ngee Ann Polytechnic (NP)  
**Fee:** \$30  
**Pre-Registration:** Yes  
**Contact:** Khoo-Tan Peck Ha  
**Tel:** 6460-6007  
**E-mail:** kph@np.edu.sg  
**Fax:** 6467-1730

Is an abnormal heart rhythm dangerous? In fact, an abnormal heart beat is very common. Almost all of us have an occasional extra beat here or there, usually without even noticing it. Excessive stress, lack of sleep and stimulants such as caffeine (all very common during examination period), can increase the risk of arrhythmia (irregular heart rate). But abnormal heart rhythms can also be a sign of a major problem with the heart, such as abnormal heart muscles, valves or the electrical conducting system of the heart. Hence, it would be a good idea to monitor your heart rate on a regular basis. Join us for this hands-on workshop to build your own heart rate detector. We will share with you the concepts of heart-rate detection and then guide you through the construction of one so that you can take home a working detector. Then go and have fun checking out the heart conditions of your family members and friends!



## Audio Technologies - Past, Present and Future

8 September

**Time:** 12.30pm - 2pm  
**Venue:** Republic Polytechnic, Library Public, Secondary & Tertiary Students, and Professionals  
**Target:** Republic Polytechnic (RP)  
**Organiser:** Republic Polytechnic (RP)  
**Fee:** No Charge  
**Pre-Registration:** Yes  
**Contact:** Cindy Chua  
**Tel:** 6319-3430  
**E-mail:** cindy\_chua@rp.edu.sg  
**Fax:** 6415-1310

Is full digital amplification the way forward to eliminate analog noise? Confused by various multi-channel formats, 5.1 or 6.1? Is vacuum tube amplification the thing of the past? This talk will present a brief history of audio design, introduce the latest trend of audio technologies and provide a glimpse into the future of audio engineering.



## Temasek Engineering Project Show - ENGenuity @ TP

8 - 10 September

**Time:** 9am - 4pm  
**Venue:** Temasek Polytechnic/Temasek Engineering School  
**Target:** Secondary School Students & Professionals  
**Organiser:** Temasek Polytechnic (TP)  
**Fee:** No Charge  
**Pre-Registration:** Yes  
**Contact:** Teo Kin Hua  
**Tel:** 6780-5513  
**Email:** kinhua@tp.edu.sg  
**Fax:** 6789-0374

Temasek Engineering Project Show aims to highlight projects that showcase the innovativeness and ingenuity displayed by the graduating students of Temasek Engineering School. Practical solutions are important as they demonstrate the importance of combining theory with practice in actual projects. Exhibits on show include various exciting projects in the areas of robotics, automation, PDA programming, Java programming, wireless communications, power electronics, and many more.



## Process Control Systems

8 September

**Time:** 9am - 12nn  
**Venue:** School of Chemical & Life Sciences, Workshop W316  
**Target:** Secondary 3 & 4 Students with Physics Background  
**Organiser:** Singapore Polytechnic (SP)  
**Fee:** No Charge  
**Pre-Registration:** Yes  
**Contact:** Lee Fook Choon  
**Tel:** 6879-0487  
**Email:** LeeFC@sp.edu.sg  
**Fax:** 6772-1976

In the first experiment, participants will familiarise themselves with manual and automatic operation and control of a tank level process. They will observe the effects of changing controller parameters (integral and derivative action time) and the introduction of a process disturbance on closed loop tank level response. In the second experiment, students observe how the pressure in a vessel can be maintained by a split range control system. Both experiments show the applications of physics principles to process control.



## Resistor Colour Codes and Ohm's Law

8 September

**Time:** 9am - 12nn  
**Venue:** School of Chemical & Life Sciences, Workshop W312  
**Target:** Secondary 3 & 4 Students  
**Organiser:** Singapore Polytechnic (SP)  
**Fee:** No Charge  
**Pre-Registration:** Yes  
**Contact:** Kong Ling Teck  
**Tel:** 6772-1114  
**Email:** konglingteck@sp.edu.sg  
**Fax:** 6772-1976

In this workshop, participants will obtain an idea on how to deduce resistor values from the resistor colour code bands, how to construct simple electronic circuits using selected resistors and the project board, and how to measure fundamental electrical units such as voltage, current and resistance using multimeters. All these are to strengthen or enhance their knowledge on Ohm's Law that they are learning in secondary schools.



## GPS (Global Positioning System) "Treasure Hunt" in SP

8 September

**Time:** 1pm - 3pm  
**Venue:** School of Design & the Environment, Block 3, T304  
**Target:** Secondary 3 & 4 Students  
**Organiser:** Singapore Polytechnic (SP)  
**Fee:** No Charge  
**Pre-Registration:** Yes  
**Contact:** Ong Chee Fatt  
**Tel:** 6870-4623  
**Email:** c.f.ong@sp.edu.sg  
**Fax:** 6772-1973

Using GPS for "Treasure Hunt" in SP. The students will be divided into groups of 2. Each group will be issued a PDA with GPS Receiver. The PDA will be loaded with the ArcPad software. The students will use ArcPad to view the SP Campus map. They will use GPS for navigation and location of the "treasure". They have to update the map with information collected about the "treasure". The group that takes the shortest time to complete the "treasure-hunt" activity will be the winner.

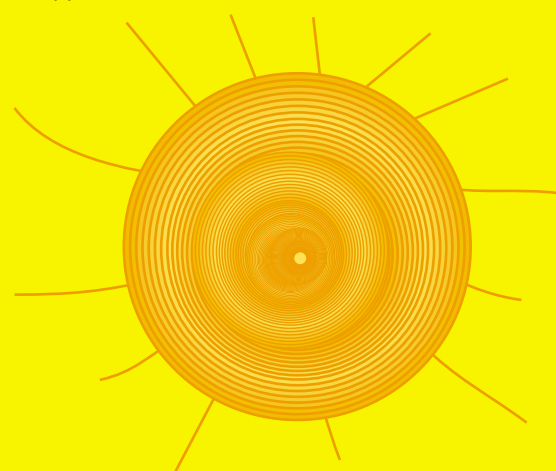


## Solar Energy for Fun

8 September

**Time:** 2pm - 5pm  
**Venue:** School of Electrical & Electronic Engineering, Block 12, T12602  
**Target:** Secondary School Students  
**Organiser:** Singapore Polytechnic (SP)  
**Fee:** No Charge  
**Pre-Registration:** Yes  
**Contact:** Saira Kuttan  
**Tel:** 6772-1935  
**Email:** Saira99@sp.edu.sg  
**Fax:** 6772-1974

Learn basic concepts of solar energy and understand how it can be used in the development of solar toys, solar fountain, solar lamp, solar car and other appliances.



## Protect Yourself on the Internet

8 September

**Time:** 2pm - 5pm  
**Venue:** School of Electrical & Electronic Engineering, Block 9, T933  
**Target:** Secondary School Students & Teachers  
**Organiser:** Singapore Polytechnic (SP)  
**Fee:** No Charge  
**Pre-Registration:** Yes  
**Contact:** Saira Kuttan  
**Tel:** 6772-1935  
**E-mail:** Saira99@sp.edu.sg  
**Fax:** 6772-1974

The media is filled with stories about threats from the Internet. Participants will learn how computer networks and the Internet work, and the tools and methods for protecting their home computer and networks while on the Internet.

# science.04

Anticipate more fascinating science truths.



## Create Your Own Fun Special Effects on the Web

8 September

Time: 2.30pm - 5pm  
 Venue: School of Info-Communications Technology, Block 20, T2034  
 Target: Secondary 3 & 4 Students  
 Organiser: Singapore Polytechnic (SP)  
 Fee: \$10  
 Pre-Registration: Yes  
 Contact: Zaleha  
 Tel: 6772-1941  
 E-mail: Zaleha@sp.edu.sg  
 Fax: 6779-7912

How do web developers include special effects inside the web pages on the fly? How do we make the web pages talk to the users and listen for user instructions? We will experience the strategies on reusing and improving other people's work on special web effects and have the above questions answered.



## SingHealth Research Facilities Open House

8 September

Time: 9.30am - 12nn  
 Venue: SingHealth  
 Target: Secondary, JC & Polytechnic Students  
 Organiser: SingHealth (Singapore Health Services Pte Ltd)  
 Fee: No Charge  
 Pre-Registration: Yes  
 Contact: Jamilah  
 Tel: 6425-2591  
 E-mail: noorjamilah@science.edu.sg  
 Fax: 6561-6361

Join us on this SingHealth Research Facilities Open House to learn more about what scientists are doing for our health in areas such as neuroscience and cancer. Why are some people better at learning a second or even a third language? The Cognitive Neuroscience Laboratory looks at these questions as well as delving into interesting areas such as, what happens to our brain when we get old and what happen to people who are deprived of sleep. Find out how Functional Magnetic Resonance Imaging (fMRI) can tell us more about our brain functions. Parkinson's Disease is a devastating neurodegenerative disease. Visit the Neuroscience Laboratory to see how molecular techniques can be used to investigate this complex disease. Molecular techniques are also very powerful tools in the study of cancer. A look at the Multiple Myeloma Laboratory will give you insights into how this cancer of the bone marrow cells is being studied.



## Magic of Microelectronics

9 & 15 September

Time: 10am - 12nn  
 Venue: Microelectronic Design and Applications Centre, Blk 30, Level 1, Room 18 (#30-01-18)  
 Target: Secondary School Students & Teachers  
 Organiser: Ngee Ann Polytechnic (NP)  
 Fee: No Charge  
 Pre-Registration: Yes  
 Contact: Tan Jui Kuan  
 Tel: 6460-6152  
 E-mail: tj@np.edu.sg  
 Fax: 6467-1730

This entertaining presentation will be sprinkled with Magic Tricks and will attempt to demystify microelectronics in a light hearted way. Incorporates a tour of NP's Wafer Fabrication laboratory.



## Build A Wireless Controlled Solar Car and Solar Car Competition

9 - 10 September

Time: 9am - 4pm  
 Venue: Ngee Ann Polytechnic Block 80 Labs  
 Target: Secondary 3, 4 & 5 Students  
 Organiser: Ngee Ann Polytechnic (NP)  
 Fee: No Charge  
 Pre-Registration: Yes  
 Contact: Lock Kai Hong  
 Tel: 6460-6717  
 E-mail: kh3@np.edu.sg  
 Fax: 6467-6504

This workshop aims to provide students with the basic knowledge and practical skills in building a wireless controlled solar car. At the end of the workshop, students will get to build for themselves a solar car. One set of the required material will be provided in the workshop. Students can also sign up for the Ngee Ann Polytechnic's Engineering Week Solar Car competition on 4 November 2004.



## The Human Cardiovascular System

9 - 10 September

Time: 9am - 12nn & 2pm - 5pm  
 Venue: Biomedical Engineering Technology Centre, Blk 8, level 3, Rooms 3 & 4 (#08-03-03, #08-03-04)  
 Target: Public & Secondary School Students  
 Organiser: Ngee Ann Polytechnic (NP)  
 Fee: No Charge  
 Pre-Registration: Yes  
 Contact: Dennis Tam/Tim Foo/Tan Bee Kim  
 Tel: 6460-6193/6460-6143/6460-8417

Want to find out how your heart work and how to measure heart signals? Come and find out for yourself in this hands-on session where you get to play "doctor". You will get to find out: (1) How healthy your heart is (2) The electrical activity of the heart and the Electrocardiogram (3) Blood Pressure, Sphygmomanometers & Oscillometric Metres (4) Heart Sound and the Stethoscope (5) Common Cardiovascular Ailments (6) Introduction to Cardiovascular Equipment and Understand How It Works.



## Singapore Robo Grand Prix Camp

9 - 11 September

Time: 9am - 4pm  
 Venue: Temasek Polytechnic/Temasek Engineering School  
 Target: Secondary School Students  
 Organiser: Temasek Polytechnic (TP)  
 Fee: No Charge  
 Pre-Registration: Yes  
 Contact: Low San San  
 Tel: 6780-5426  
 E-mail: sansan@tp.edu.sg  
 Fax: 6787-4247

Customised specially for first-time Robo Grand Prix participants, this workshop introduces students to the basics of robotic technology. Participants will learn about hardware design and software programming in order to create the fastest and most reliable Robo-racers. A mini competition will be held at the end of the workshop to allow participants to apply what they have learned, as well as to benchmark their skills against more experienced rivals, in preparation for the Singapore Robo Grand Prix @ Motorshow to be held from 16 - 19 Nov 2004 at Suntec City.



## Science of Innovation - TRIZ

9 September

Time: 1pm - 5pm  
 Venue: Ngee Ann Polytechnic  
 Target: Secondary School Teachers  
 Organiser: Ngee Ann Polytechnic (NP)  
 Fee: No Charge  
 Pre-Registration: Yes  
 Contact: Yong Kam Seng  
 Tel: 6460-6478  
 E-mail: yks@np.edu.sg  
 Fax: 6468-1297

Participate in the workshop and learn about the science of innovation using TRIZ Principles, and how, teachers and students could use them in the following situations: 1) student projects supervision and, 2) pupils using them for their innovation projects.



## SPELL Bee - Singapore Polytechnic Experience in Learning Life Sciences

9 - 10 September

Time: 1.30pm - 5pm  
 Venue: SP Lecture Theatre LT1A(A)  
 Target: Secondary 3 & 4 Students  
 Organiser: Singapore Polytechnic (SP)  
 Fee: No Charge  
 Pre-Registration: Yes  
 Contact: Audrey A Yuen  
 Tel: 6870-6145  
 E-mail: AAyuen@sp.edu.sg  
 Fax: 6772-1976

Spelling of 'difficult' words in biology and biomedical science through crossword puzzles, pictograms, jumbled words and vocabulary games. It is a team effort consisting of 3 students per team. Students will also attend a talk on an interesting life science topic. 9 Sept (Preliminary Round); 10 Sept (Final Round).



## Nanotechnology Demystified

10 September

Time: 1pm - 5pm  
 Venue: Temasek Polytechnic/Temasek Engineering School/LT34  
 Target: Tertiary Students and Professionals  
 Organiser: Temasek Polytechnic (TP)  
 Fee: No Charge  
 Pre-Registration: Yes  
 Contact: Low San San  
 Tel: 6780-5426  
 E-mail: sansan@tp.edu.sg  
 Fax: 6787-4247

Nanotechnology has been a buzz word in town for quite a while. However, there are many different definitions of Nanotechnology. So, what exactly is Nanotechnology? What kind of future will it create and how will it affect our lifestyles? In industry, what are the implications for EDA tools, manufacturing processes and equipment? These are some of the intriguing questions which will be addressed in this seminar. Organised by Temasek Polytechnic together with LightHouse Worldwide Solutions Pte Ltd and Mentor Graphics Asia Pte Ltd.

# science.04

With Science, life is getting more interesting.



## Bioprocessing - Purification of Plasmid DNA

10 September

Time: 9am - 4pm  
Venue: School of Chemical & Life Sciences, Block 1, T101B  
Target: Secondary 3 & 4 Students  
Organiser: Singapore Polytechnic (SP)  
Fee: No Charge  
Pre-Registration: Yes  
Contact: Jin Kai  
Tel: 6870-4878  
E-mail: KJIN@sp.edu.sg  
Fax: 6772-1976

With the development of protein drugs (Biopharmaceuticals) picking up gears, the demand for these new, improved and commercialised drugs will be increasingly met through Bioprocessing - an advanced manufacturing process, which involves upstream biological processing of living organisms or their cellular components and the downstream, biological, chemical or physical processing of the products harvested. Plasmid DNA purification is one essential unit operation involved in the upstream DNA manipulation and the downstream Bioprocessing of DNA molecules for therapeutic applications.



## CAD - Groom Your Dream Classroom/Workshop

10 September

Time: 1pm - 4pm  
Venue: School of Design & the Environment, Block 3, T305  
Target: Secondary 3 & 4 Students  
Organiser: Singapore Polytechnic (SP)  
Fee: No Charge  
Pre-Registration: Yes  
Contact: Ng Geok Ling  
Tel: 6870-4623  
E-mail: ngl@sp.edu.sg  
Fax: 6772-1973

Use CAD to Groom your Dream Classroom/Workshop. This is a design activity. Secondary students will be divided into groups of 2. Each group will be assigned to a PC with MicroStation (Mstn) V8. A 3D computer model of SP workshop/classroom will be preloaded to each PC. They will then use a digital camera to snap a picture of material on site and map it onto the computer model. Alternatively, they can use the existing material palette preloaded to each PC. The students will use the material assignment tool in Mstn V8 to groom up their dream workshop/classroom. The group with the most realistic model that has the most stimulating and aspiring learning environment will be the winner.



## Wireless Home Networking

10 September

Time: 2pm - 5pm  
Venue: School of Electrical & Electronic Engineering, Block 9, T933  
Target: Secondary School Students and Teachers  
Organiser: Singapore Polytechnic (SP)  
Fee: No Charge  
Pre-Registration: Yes  
Contact: Saira Kuttan  
Tel: 6772-1935  
E-mail: Saira99@sp.edu.sg  
Fax: 6772-1974

Learn how to set up a wireless home network to share resources (such as printer and Internet connection) or play network games.

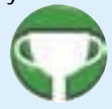


## Will Our Life be The Same with The Coming of Electronic Product Code (EPC) and Radio Frequency Identification (RFID) Tags?

10 September

Time: 12.30pm - 2pm  
Venue: Republic Polytechnic, Library Public, Secondary & Tertiary Students and Professionals  
Target: Republic Polytechnic (RP)  
Organiser: Republic Polytechnic (RP)  
Fee: No Charge  
Pre-Registration: Yes  
Contact: Cindy Chua  
Tel: 6319-3430  
E-mail: cindy\_chua@rp.edu.sg  
Fax: 6415-1310

The Electronic Product Code (EPC) is a unique number that identifies a specific item or a product. The EPC is stored in a radio frequency identification (RFID) tag, which consists of a silicon chip and an antenna. Once the EPC is retrieved from the RFID tag, it can be associated with dynamic data such as where the item originated or the date of its production. Just imagine what will happen when all the items around you are tagged with such kinds of RFID devices.



## Automation Competition

11 September

Time: 8am - 4pm  
Venue: Republic Polytechnic  
Target: Secondary School Students  
Organiser: Republic Polytechnic (RP)  
Fee: No Charge  
Pre-Registration: Yes  
Contact: Hisham Bin Moosa  
Tel: 6376-8308  
E-mail: hisham\_moosa@rp.edu.sg  
Fax: 6415-1310

Learn how to design and build an automated pick and place robotic system for the high-tech manufacturing industries. A simple pick-and-place application involves a robotic arm that moves manufactured parts from one assembly station to another station. Picking up a part and placing it at the next station involves multiple moves and requires interaction with sensors and a command system. In this one-day competition, you have a chance to pit your creativity skills to design and build the most effective robotic arm that will pick and place selected objects. The team with the robotic arm that can pick and place the most objects in the fastest time will win the competition.



## Graphics and Animations for World Wide Web - The Fun Way

11 September

Time: 9am - 1pm  
Venue: Nanyang Polytechnic Blk S Level 5 Rm S558  
Target: Secondary School Students  
Organiser: Nanyang Polytechnic (NYP)  
Fee: No Charge  
Pre-Registration: Yes  
Contact: Tommy Low  
Tel: 6550-0688  
Email: Tommy\_LOW@nyp.gov.sg  
Fax: 6454-9871

Learn the fun, creative way of designing graphics and animations for the exciting World Wide Web. Be part of the new breed of e-web users who derive satisfaction in being unique and hip.



## Glider Flight

11 September

Time: 9am - 1pm  
Venue: Ngee Ann Polytechnic, Mechanical Engineering Division, School of Engineering  
Target: Secondary School Students  
Organiser: Ngee Ann Polytechnic (NP)  
Fee: No Charge  
Pre-Registration: Yes  
Contact: James Leung  
Tel: 6460-6552  
E-mail: lhc@np.edu.sg  
Fax: 6467-7384

Participants will learn the basic principles of flight at the workshop and learn how to optimise the design of their own gliders. Participants will use balsa wood and simple tools to construct their own gliders. The design-and-build workshop enables participants to fine-tune their design and testify the theory. All participants will compete with their own gliders and go home with their own creation.



# Calendar of Events





# science.04

Activities for the curious and adventurous.



## Amazing Flying Machines Competition & Aerospace Workshop

11 - 25 September

Time: 9am - 1pm  
 Venue: Temasek Polytechnic/Temasek Engineering School/LT 37  
 Target: Secondary School Students  
 Organiser: Temasek Polytechnic (TP)  
 Fee: No Charge  
 Pre-Registration: Yes  
 Contact: Low San San  
 Tel: 6780-5426  
 E-mail: sansan@tp.edu.sg  
 Fax: 6787-4247

Learn how to design and build your own flying machine and compete to win some prizes! Since ancient time, men have always been fascinated with flying. During the Renaissance period, Leonardo Da Vinci drew sketches of various flying machines, but it was not until 1903 that the Wright brothers flew the first sustained powered flying machine for 120 feet. The Aerospace workshop recreates the excitement of designing flying machines. Participants will learn about the fundamentals of flight and aerodynamics, and apply their knowledge to design and build their own innovative flying machine of the future, using common materials, such as paper, plastic, Styrofoam, etc. In addition to having fun and exercising creativity, participants can also win prizes in various categories in the competition, including longest flight distance, most innovative design and best presentation.



## Sunflower Fest

11 September

Time: 9am - 12nn  
 Venue: Ngee Ann Polytechnic  
 Target: Secondary School Students  
 Organiser: Ngee Ann Polytechnic (NP)  
 Fee: No Charge  
 Pre-Registration: Yes  
 Contact: Dr Hedy Goh  
 Tel: 6460-6920  
 E-mail: gkl@np.edu.sg

This Festival will represent the culmination of an ornamental plant growing competition for secondary schools. The fest will include flower display/exhibition at the NP Convention Centre where students will display their best blooms and these will be judged by a panel of judges.



## Bull's Eye Competition

11 September

Time: 9am - 1pm  
 Venue: Ngee Ann Polytechnic, Mechanical Engineering Division, School of Engineering  
 Target: Secondary School Students  
 Organiser: Ngee Ann Polytechnic (NP)  
 Fee: No Charge  
 Pre-Registration: Yes  
 Contact: Tay Mui Hua  
 Tel: 6460-6622  
 E-mail: tmh@np.edu.sg  
 Fax: 6467-7384

Bull's Eye 2004 – a design competition event for secondary schools. There are two parts to the competition: (1) Design & Build – to design and make a device that will move from one place to another, either overcoming an obstacle or bypassing it, without the use of sensors, timers or controllers. (2) Design & Model – to design and create the model on a licenced software called Pro/DESKTOP.



## Flash Animation on the Web

11 September

Time: 9.30am - 12.30pm  
 Venue: School of Info-Communications Technology, Block 20, T2031  
 Target: Public, Primary & Secondary School Students  
 Organiser: Singapore Polytechnic (SP)  
 Fee: \$20  
 Pre-Registration: Yes  
 Contact: Zaleha  
 Tel: 6772-1941  
 E-mail: Zaleha@sp.edu.sg  
 Fax: 6779-7912

Flash is currently used on the Web for animation and games. This workshop will introduce the interface of the Flash authoring environment. Participants will be able to have hands-on session on how to draw simple shapes and objects in Flash, do a simple motion tweening to effect an animation and publish a Flash animation onto a web page.



## My Two Feet - Measurement of Foot Pressure

11 September

Time: 9.30am - 12nn  
 Venue: School of Mechanical & Manufacturing Engineering, Block 16, T1613  
 Target: Secondary & Tertiary Students and Teachers  
 Organiser: Singapore Polytechnic (SP)  
 Fee: No Charge  
 Pre-Registration: Yes  
 Contact: Ong Fook Rhu  
 Tel: 6870-4782  
 E-mail: OngFR@sp.edu.sg  
 Fax: 6772-1975

What do you know about your feet and the shoes you wear? Flat foot, high arch, bunions, corns and heel pain, as well as hip and lower back pain are some of the indications of the feet under stress. These problems usually arise as a result of poor shoe fitting and inappropriate footwear. When you consider that walking puts up to 1.5 times the body weight on the foot, while running can exert 3 or 4 times the body weight, and the feet clock approximately 1,600km in a year, any undue stress on the feet would significantly affect such activities. This programme gives you the opportunity to find out the behaviour of your feet with and without footwear through the measurement of foot pressure distribution. You will encounter Centre of Pressure (COP) trajectory, peak forces and contact pressure while you are standing, walking, running or doing various activities. So, what are you waiting for? Bring your favourite shoes, and let your feet do the talking.

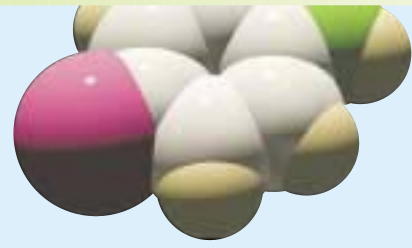


## Optimising and Securing Your Wireless LAN

15 September

Time: 2pm - 5pm  
 Venue: School of Info-Communications Technology, Block 20, T2022  
 Target: Secondary School Students  
 Organiser: Singapore Polytechnic (SP)  
 Fee: \$10  
 Pre-Registration: Yes  
 Contact: Zaleha  
 Tel: 6772-1941  
 E-mail: Zaleha@sp.edu.sg  
 Fax: 6779-7912

Setting up a wireless LAN with standard settings is not enough. Learn how to optimise and secure your wireless LAN.



## Eureka01

17 September

Time: 8.30am - 5pm  
 Venue: The Matrix Auditorium, Biopolis@ one-north, 30 Biopolis Street  
 Target: Public, Secondary & Tertiary Students and Professionals  
 Organiser: Republic Polytechnic (RP)  
 Fee: \$10  
 Pre-Registration: Yes  
 Contact: Tan Jian Chye Sam  
 Tel: 9100-2643  
 E-mail: lionheartsam@myrp.edu.sg

A science symposium with the theme "Biomedical Science, The Next 10 Years", comprising speakers from the Biomedical Science industry provides insights into current trends and developments in the industry. Registration fees (inclusive of refreshment): Before 1 Sept 2004, \$8 Public, \$5 Students. From 1 Sept 2004, \$10 Public, \$6 students. Please enquire for bulk registration discount. Visit <http://myrp2.myrp.edu.sg/sites/cca/sasc/scisym/> for more information.

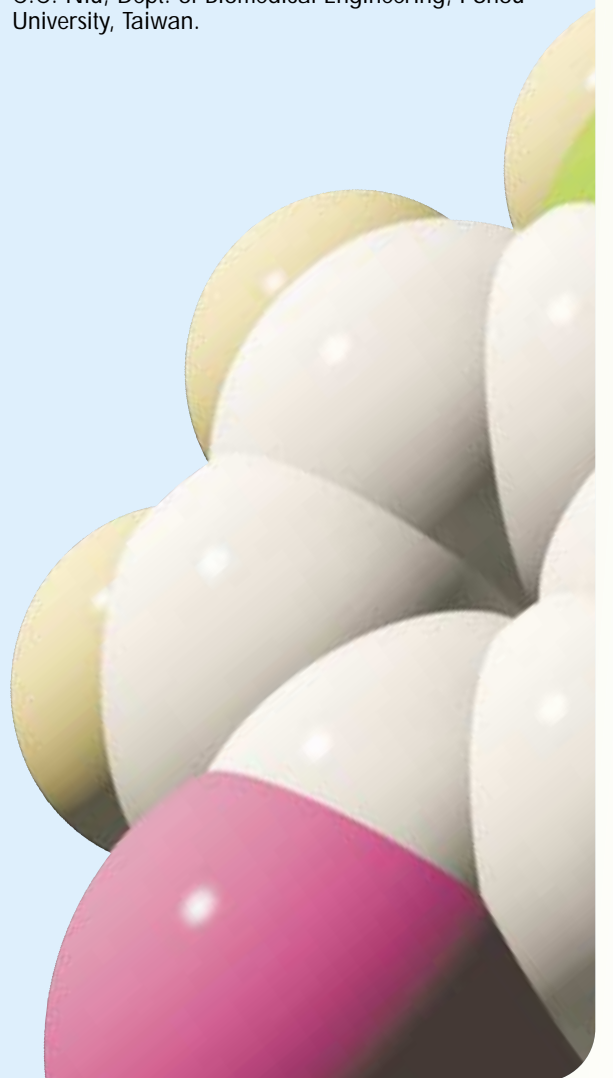


## Biomedical Materials

17 September

Time: 2.30pm - 4pm  
 Venue: SP Lecture Theatre LT4  
 Target: Secondary, Polytechnic & Tertiary Students  
 Organiser: Singapore Polytechnic (SP)  
 Fee: No Charge  
 Pre-Registration: Yes  
 Contact: Tay Chin How  
 Tel: 6772-1320  
 E-mail: chinhow@sp.edu.sg  
 Fax: 6772-1976

This talk will review the molecular theory and knowledge of Chemistry, Physics, Materials Science and Mechanical Engineering used in the study of materials for biomedical applications. Specific examples will be given in the use of biomaterials for prosthetic and transplantation. The interfacial phenomena existing between synthetic and natural biomaterials will be discussed. Speaker: Professor C.C. Niu, Dept. of Biomedical Engineering, I-Shou University, Taiwan.



# science.04

Learning has never been this fun!



## Flash for Web - Introductory Lesson

18 September

Time: 9am - 12nn  
Venue: Nanyang Polytechnic, 180 Ang Mo Kio Ave 8, Blk L: L.437 (School of IT)  
Target: Secondary School Students  
Organiser: Nanyang Polytechnic (NYP)  
Fee: No Charge  
Pre-Registration: Yes  
Contact: Simon Seetoh  
Tel: 6550-1633  
E-mail: simon\_seetoh@nyp.gov.sg  
Fax: 6452-0110

Workshop introduces Macromedia Flash and how this tool can be used to enhance web sites.



## The Ups and Downs of An Engineering Technopreneur

18 September

Time: 9.30am - 12.30pm  
Venue: NUS Engineering Auditorium, Faculty of Engineering, EA Block, Ground Level  
Target: Public, Tertiary Students and Professionals  
Organiser: National University of Singapore (NUS)  
Fee: No Charge  
Pre-Registration: Yes  
Contact: Julie Liau  
Tel: 6874-4436  
E-mail: engliauj@nus.edu.sg  
Fax: 6779-5594

Too often the best research projects are sidelined into a corner because of a lack of good and sound business plan to market products. Tomorrow's engineers who are to be "thinkers, investors and entrepreneurs" must combine the best business elements into their research so as to have relevant industry applications and a ready market for their inventions. The engineer must also be business trained. Hence, a technopreneur!



## Maths Using IT

18 September

Time: 9am - 12nn  
Venue: Nanyang Polytechnic, 180 Ang Mo Kio Ave 8, Blk L: L.530 to L.532  
Target: Secondary School Students  
Organiser: Nanyang Polytechnic (NYP)  
Fee: No Charge  
Pre-Registration: Yes  
Contact: Lim Soo Khim  
Tel: 6550-1754  
E-mail: lim\_soo\_khim@nyp.gov.sg  
Fax: 6452-0110

Covers the following topics • IT & Maths – find out how they are linked? • A fun workshop "Discover the power of using IT tools in solving Maths problems!" • Maths Tips Forum – Get a better grasp of Maths concepts – prepare for your 'O' levels! • Un-wind with exciting games!



## Fun with Biomedical Informatics & Engineering (BIE)- Improving Human Lives

18 & 25 September

Time: 9am - 12nn  
Venue: Temasek Polytechnic/Temasek Engineering School/LT 37  
Target: Secondary School Students  
Organiser: Temasek Polytechnic (TP)  
Fee: No Charge  
Pre-Registration: Yes  
Contact: Low San San  
Tel: 6780-5426  
E-mail: sansan@tp.edu.sg  
Fax: 6787-4247

This workshop introduces students to the exciting world of Biomedical Informatics & Engineering (BIE) which integrates information technology and engineering in life sciences. Students will attend talks and also participate in hands-on workshops to explore various biomedical applications. Students will also learn how biomedical professionals and engineers are improving human life, using various biomedical tools and equipment.



## Creative Physics Workshop

18 & 25 September

Time: 9am - 12nn  
Venue: Temasek Polytechnic/Temasek Engineering School/LT 37  
Target: Secondary School Students  
Organisers: Temasek Polytechnic (TP)  
Fee: No Charge  
Pre-Registration: Yes  
Contact: Low San San  
Tel: 6780-5426  
E-mail: sansan@tp.edu.sg  
Fax: 6787-4247

This workshop aims to help students understand the topic of "Electricity" in the "O" level Physics examination better. Students will attend lectures and also take part in extensive hands-on experiment in basic electricity in our well-equipped laboratories. They will also be introduced to the world of microelectronics, semiconductors, integrated circuits (ICs) and wafer fabrication technology. These ICs are used extensively in computers, telecommunication equipment, audio-video products, satellites, airplanes and many other electronic products.



## Fun with ELECTRONICS!

18 & 25 September

Time: 9am - 12nn  
Venue: Temasek Polytechnic/Temasek Engineering School/LT 37  
Target: Secondary School Students  
Organiser: Temasek Polytechnic (TP)  
Fee: No Charge  
Pre-Registration: Yes  
Contact: Low San San  
Tel: 6780-5426  
E-mail: sansan@tp.edu.sg  
Fax: 6787-4247

Electronics forms an important part of the everyday operation of homes, factories and offices. Satellite communications, sophisticated defence systems, advanced medical equipment and audio-video systems are all made possible with modern electronics. In addition, mobile phones, PCs, PDAs, MP3 players, digital cameras, DVD players, LCD displays, and other electronic equipment are improving the quality of our family as well as our work lives. This workshop will help participants to understand both the theoretical and practical aspects of modern electronics through lectures and hands-on laboratory sessions. During the workshop, participants will build their own electronic counting system to monitor the entrance and exit of visitors.



## Digital Audio Broadcasting (DAB) Data Services

23 September

Time: 9am - 4pm  
Venue: Digital Signal Processing Technology Centre, Blk 8, Level 6, Room 4 (#08-06-04)  
Target: Secondary School Students & Teachers  
Organiser: Ngee Ann Polytechnic (NP)  
Fee: No Charge  
Pre-Registration: Yes  
Contact: Chua Beng Koon  
Tel: 6460-8536  
E-mail: cbk@np.edu.sg  
Fax: 6467-1730

Digital radio provides CD quality audio programmes, but more importantly, it supports broadcasting of data services such as broadcasting website, slideshow and dynamic label. We aim to create the awareness of Digital Audio Broadcasting(DAB) by introducing participants to the world of DAB and show them how to create data services and broadcast them using our in-house Digital Radio transmission system.



## Introduction to AutoCAD 2D and 3D

25 September

Time: 9am - 12.30pm  
Venue: School of Mechanical & Manufacturing Engineering, Workshop W11  
Target: Secondary 3 & 4 Students & Teachers  
Organisers: Singapore Polytechnic (SP)  
Fee: No Charge  
Pre-Registration: Yes  
Contact: Soh Kim Fai  
Tel: 6870-4789  
E-mail: skimfai@sp.edu.sg  
Fax: 6772-1975

AutoCAD is a popular software used in design and drafting offices. This workshop will introduce to participants, the AutoCAD computer-aided design software. It is useful for students and teachers involving in the subject of Design and Technology. Participants will learn how to create 2D and 3D objects using this software in a well-equipped computer laboratory.



## Having Fun with Nanotechnology

25 September

Time: 9.30am - 12.30pm  
Venue: NUS Engineering Auditorium, Faculty of Engineering, EA Block, Ground Level  
Target: Public, Secondary & Tertiary Students and Professionals  
Organiser: National University of Singapore (NUS)  
Fee: No Charge  
Pre-Registration: Yes  
Contact: Julie Liau  
Tel: 6874-4436  
E-mail: engliauj@nus.edu.sg  
Fax: 6779-5594

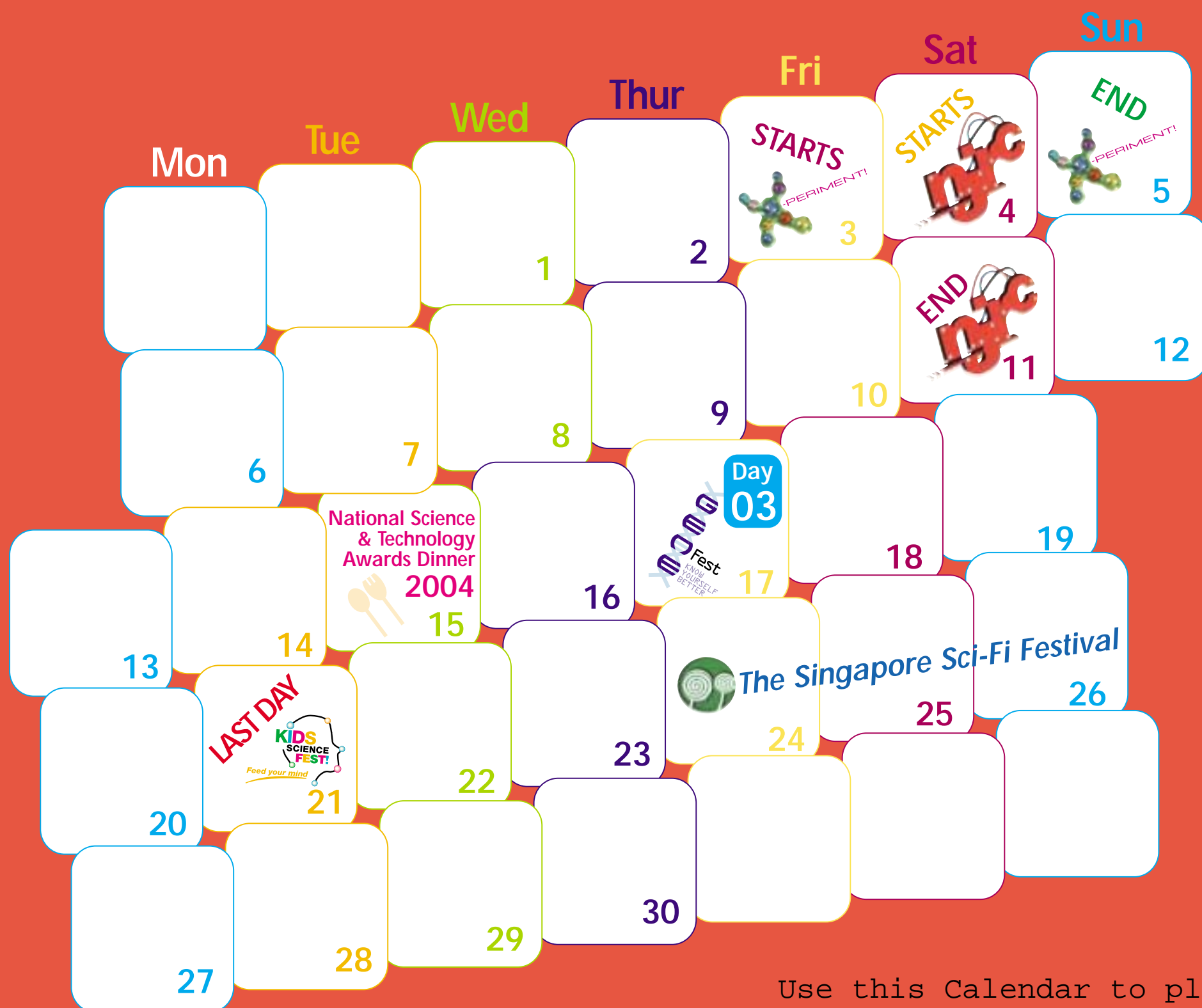
How do we make nanostructures in a quick and easy manner? The recipe to success includes a combination of gravity, surface tension and capillary forces. This talk will highlight several aspects of nanosphere lithography in relation to making arrays of nanostructures and devices as well as their potential applications.



# Calendar of Events

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# Calendar of Events



Use this Calendar to plan your exciting science month!!!

science.04 is organised by A\*STAR and Singapore Science Centre, in partnership with:

**BII**  
Bioinformatics Institute

**BTI**  
Bioprocessing Technology Institute

**DSI**  
Data Storage Institute

**EDB**  
Economic Development Board

**GIS**  
Genome Institute of Singapore

**HPB**  
Health Promotion Board

**I<sup>2</sup>R**  
Institute for Infocomm Research

**IBN**  
Institute of Bioengineering & Nanotechnology

**ICES**  
Institute of Chemical and Engineering Sciences

**IHPC**  
Institute of High Performance Computing

**IMRE**  
Institute of Materials Research & Engineering

**IMCB**  
Institute of Molecular and Cell Biology

**IME**  
Institute of Microelectronics

**MOE**  
Ministry of Education

**NYP**  
Nanyang Polytechnic

**NHG**  
National Healthcare Group

**NLB**  
National Library Board

**NTU**  
Nanyang Technological University

**NUS**  
National University of Singapore

**NP**  
Ngee Ann Polytechnic

**RP**  
Republic Polytechnic

**SAM**  
Singapore Art Museum

**SIMTech**  
Singapore Institute of Manufacturing Technology

**SP**  
Singapore Polytechnic

**SingHealth**  
Singapore Health Services Pte Ltd

**TP**  
Temasek Polytechnic