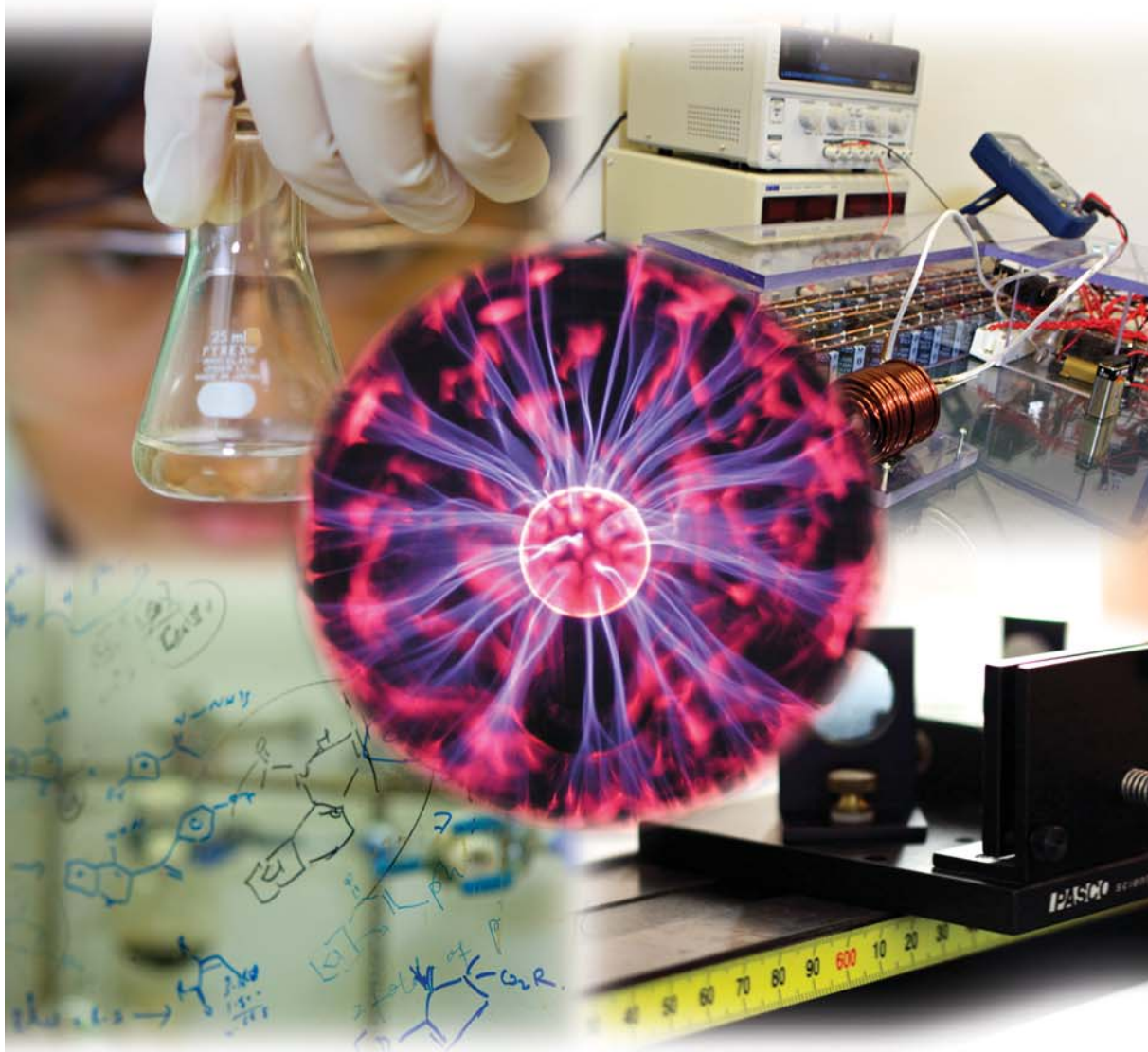




NANYANG
TECHNOLOGICAL
UNIVERSITY



CN Yang Scholars Programme

An outstanding opportunity for students passionate about Science and Engineering

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Mission and Vision

- Creating infinite possibilities for outstanding students who are passionate about Science and Engineering
- Nurturing Scientists and Engineers through a unique interdisciplinary curriculum
- Developing interest in research through a broad education in Science and Engineering



Message *from the* DIRECTOR

Over the centuries outstanding scientific and engineering discoveries have been made by individuals, but when you read their biographies or life stories, you soon realise that they did not work alone and that they had an ability to think ahead of their time; to grasp new concepts and break down boundaries in traditional thinking. They are characterised by great drive, creativity, and a willingness to take risks, and seize opportunities when they arise.

The NTU's *CN Yang* Scholars Programme, which is named after Chen Ning Yang, a Chinese born American, who won the Nobel Prize in Physics in 1957 for his ground breaking work in particle physics, seeks to instil exactly these attributes of drive, creativity and 'outside the box' thinking into the participants of the programme. You will obtain a sound theoretical knowledge to facilitate an understanding of the technical and scientific challenges mankind faces today and, perhaps even more importantly, the programme will give you numerous opportunities to experiment and test the limits of current thinking. As a *CN Yang* Scholar you will have the chance to work on cutting edge research projects in different fields, as well as meeting some of the greatest scientists and engineers alive.

Since its inception in July 2006 the programme has welcomed students from all areas of science and engineering, generating stunning ideas and opportunities, I hope that I may welcome you as a *CN Yang* Scholar in the near future.

Prof. Peter Preiser



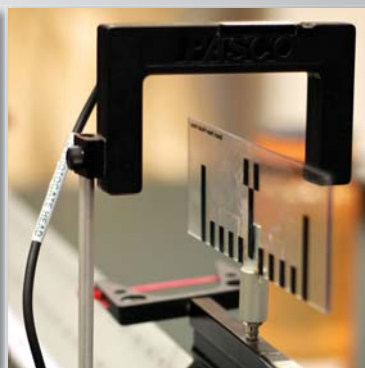
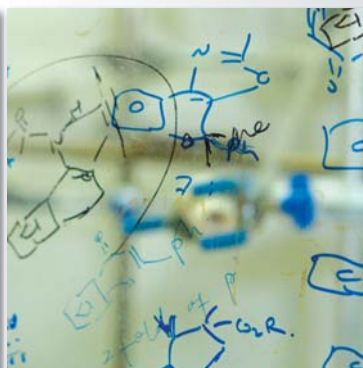
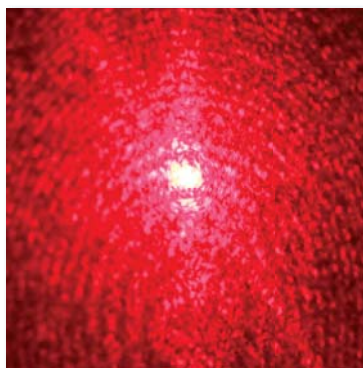
Why enter the *CN Yang* Scholars Programme?

The *CN Yang* Scholars Programme is one of the premier undergraduate programmes at the Nanyang Technological University for science and engineering students. The programme is named in honour of Professor CN Yang, Nobel Laureate in Physics (1957) and one of the greatest scientists of our era.

The programme is designed to prepare exceptional students who have a deep passion for science and engineering, for the high-technology world of the 21st century.

It shares the same philosophy as the Caltech Core Curriculum and the MIT General Institute Requirements in providing a strong and broad foundation in the basics of science and mathematics so as to empower the student to delve deeper into any discipline in science, technology, engineering and mathematics, and to develop an interest in leading edge research.

Students graduating from the challenging undergraduate programme will be awarded a special certificate on top of the degree certificate. *CN Yang* Scholar graduates who meet the admission requirements are given an option to pursue accelerated post-graduate study (PhD) with a top scholarship as well as overseas attachment. It is however not mandatory for students to pursue this option after graduating as a *CN Yang* Scholar with a Bachelor Degree.





Curriculum *at a* GLANCE

Year 1

SEMESTER 1

- Introductory Biology
- Principles of Modern Chemistry
- Calculus of One Variable
- Mechanics
- Physics Lab I or Fundamental Techniques of Experimental Chemistry and Biological Chemistry
- Courses in chosen discipline

SEMESTER 2

- Calculus of Several Variables
- Electromagnetism and Relativity
- *CN Yang* Scholars Programme Undergraduate Research Experience
- Courses in chosen discipline

Year 2

SEMESTER 1

- Linear Algebra and Differential Equations
- Waves and Quantum Mechanics
- Courses in chosen discipline

SEMESTER 2 onwards...

- Courses in chosen discipline

Eligibility



Applicants must possess outstanding Singapore-Cambridge GCE 'A' level, Local Polytechnic Diploma, NUS High School Diploma, IB Diploma, Malaysia STPM/UEC, India Standard 12, Indonesia SMA UAN (Ebtanas), PRC Gao Kao SM2/SM3 or equivalent qualifications.

For a successful application, the applicant must be enrolled in any of the following courses at NTU:

- Aerospace Engineering
- Aerospace Engineering with Business Minor
- Bioengineering
- Bioengineering with Business Minor
- Biological Sciences
- Biological Sciences with Business Minor
- Chemical & Biomolecular Engineering
- Chemical & Biomolecular Engineering with Business Minor
- Chemistry & Biological Chemistry
- Civil Engineering
- Civil Engineering with Business Minor
- Computer Engineering
- Computer Engineering with Business Minor
- Computer Science
- Computer Science with Business Minor
- Electrical & Electronic Engineering
- Electrical & Electronic Engineering with Business Minor
- Engineering with Business Minor
- Environmental Engineering
- Environmental Engineering with Business Minor
- Materials Engineering
- Materials Engineering with Business Minor
- Mathematical Sciences
- Mathematical Sciences with Minor in Finance
- Mathematics and Economics
- Mechanical Engineering
- Mechanical Engineering with Business Minor
- Physics & Applied Physics
- Physics with Second Major in Mathematical Sciences

Enrolment is limited to no more than 50 students per academic year.

“ The key philosophy of the *CN Yang* Scholars Programme is to provide inter-disciplinary training and offer ample research opportunities, which furnish the vital skills not only for excellence in science and technology related careers but also for basic survival in the modern era. Four years of research experience have taught me to persevere, to work independently, and, most importantly, to be true to science and knowledge. I believe the *CNYS*P has prepared me well for my new milestone: a PhD in Physics at University of Michigan. And I am sure all my course mates have geared up for the new challenges in life. ”



Wang Shengtao

- *CN Yang* Scholar from Physics, Class of 2011
- Hwa Chong Institution Alumnus, Singapore
- Dean's list AY2007-08
- Top *CN Yang* Scholar for Class of 2011
- Winner of the Koh Boon Hwee Scholars Award
- Winner of the Shell Eastern Petroleum Gold Medal cum Cash Award
- Currently pursuing PhD (Physics), University of Michigan

Scholarship *details and other* HIGHLIGHTS

CN Yang Scholars Programme benefits

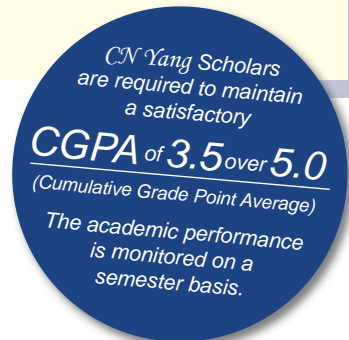
- Guaranteed overseas exchange for one semester with one-time award of S\$5,000.
- Guaranteed four years of stay in NTU halls of residence.
- Opportunities for research attachment with monetary allowance as early as year one.
- Opportunities for accelerated post-graduate study (PhD).
- Opportunities for attending an international conference with full subsidy.
- Opportunities to meet top leading scientists and academics.
- Participation in programmes offered by the NTU Institute of Advanced Studies.
- Every student will be assigned a mentor who will provide guidance for the student's whole academic programme at NTU.

**The Nanyang Scholarship will be awarded to successful local applicants.
The benefits of the Nanyang Scholarship are:**

- Tuition fee directly payable by students (after Tuition Grant)
- Living allowance up to S\$6,000 per annum
- Accommodation allowance up to S\$2,000 per annum (for scholars who reside in NTU hostels only)
- Book allowance of S\$500 per annum
- Computer allowance of S\$1,500 (One-off)
- Settling-in allowance of S\$250 (One-off)

**Eligibility of international students to apply
for one of the following scholarships:**

- ASEAN Undergraduate Scholarship
- SembCorp Undergraduate Scholarship
- SIA-NOL Undergraduate Scholarship



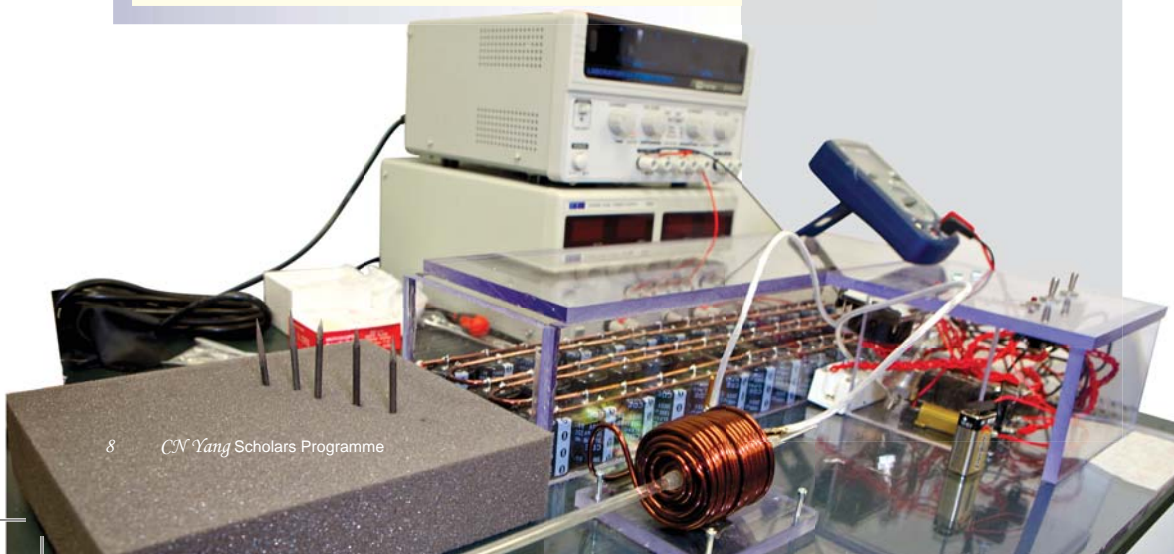
*Recipients of other scholarships are eligible to apply for the *CN Yang* Scholars Programme, i.e. PRC Undergraduate Scholarship and other scholarships by approval. Successful applicants are required to fulfil the terms and conditions of the scholarships.*

Research OPPORTUNITIES

The *CN Yang* Scholars Programme Undergraduate Research Experience provides scholars an opportunity to pursue independent research in the NTU's colleges of Science or Engineering. The research opportunities allow scholars to immerse themselves in research culture as early as year one.

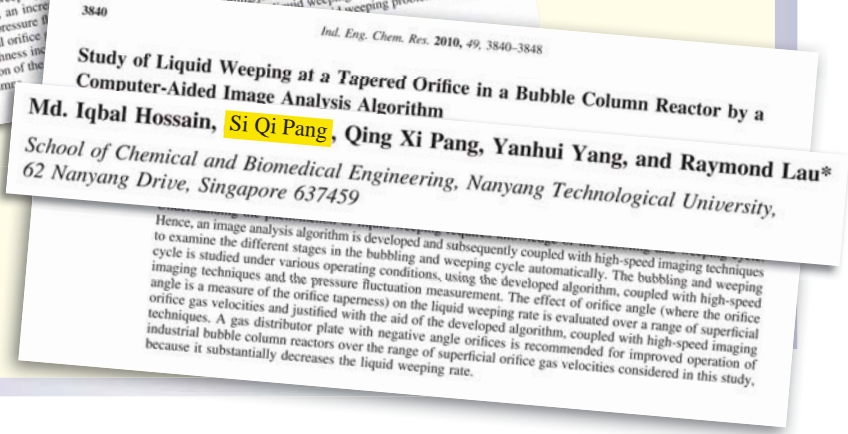
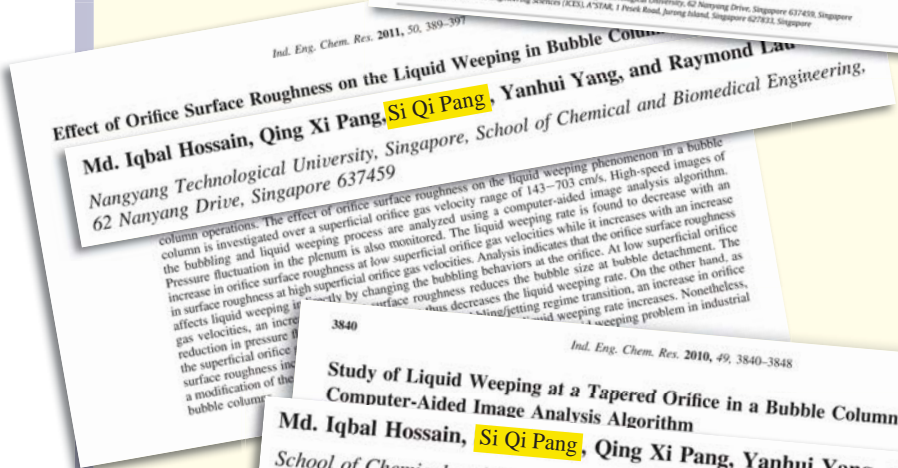
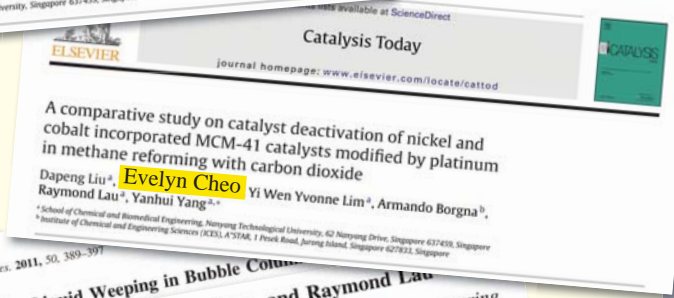
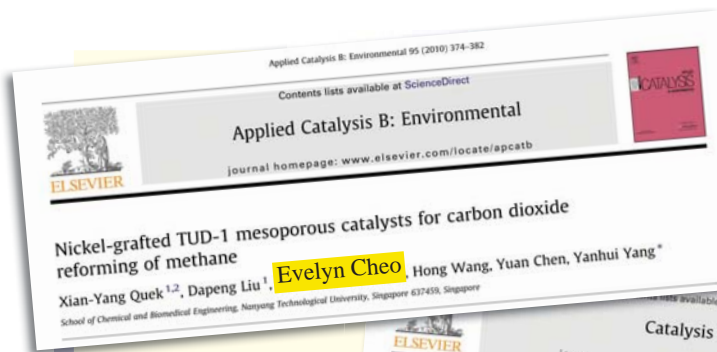
Scholars will receive monetary allowance (\$10 per hour) according to the number of hours worked, capped at 500 hours per academic year. Scholars are allowed to claim for up to 40 hours per week during Recess or Vacation and up to 10 hours per week during the Semester or Special Terms. The individual laboratory will receive compensation at the rate of \$8 per hour.

Undergraduate Research Experience on Campus (URECA) is open for *CN Yang* Scholars who meet eligibility criteria. Scholars can participate in the programme by selecting either monetary allowance at the rate of \$10 per hour or earning 4 Academic Units (AUs) throughout the programme.



Research

PUBLICATIONS



“ The *CNYS*P has provided me with a rigorous education that gave me a greater insight into the world of science, and gave me opportunities and exposure not only into beyond Mathematics, but also beyond Singapore. Under the programme, I was able to try research projects in Physics and Psychology, and eventually present my research findings at a Psychology conference in Istanbul. I was also given the chance to apply for the Istana Internship, a decision that helped me decide the career to pursue. I am currently an Associate in the Ministry of Finance, International Relations Directorate. Although this career choice seems like a big deviation from my field of study, I believe the skill sets that I have acquired through my years in NTU will aid me in overcoming the steep learning curve. ”



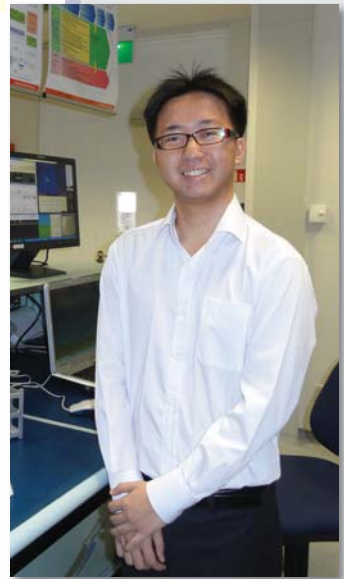
Chiang Qi Ming Aaron

- *CN Yang* Scholar from Mathematical Sciences, Class of 2011
- Hwa Chong Junior College Alumnus, Singapore
- Inaugural participant of the Istana Internship Programme
- Winner of the Koh Boon Hwee Scholars Award
- Currently working as Associate, International Relations, Ministry of Finance

“ In the *CNYSP*, I was able to develop the scientific reasoning skills that allowed me to view engineering problems from different perspective. The unique mathematics and science courses that the *CNYSP* provides also strengthened my foundation to understand my aerospace courses better. The research initiatives by the *CNYSP* allowed me to fulfil my dreams. I took part in the University Satellite Program under the sponsorship of *CNYSP* and participated in the development of NTU’s first nanosatellite and in conferences on space technologies. After graduating from NTU Aerospace Engineering with *CNYSP*, I am better equipped to do my PhD under the Nanyang President’s Graduate Scholarship with DSO augmentation. ”

Tan Chun Kiat

- *CN Yang* Scholar from Aerospace Engineering, Class of 2011
- Nanyang Junior College Alumnus, Singapore
- Featured at the Straits Times and the New Paper for the Satellite Project (July 2011)
- Currently pursuing PhD under NPGS Award with DSO





The 60th Lindau Nobel Laureate Meeting

the 3rd Interdisciplinary Meeting

The Nobel Laureates Meeting



Er Chern Han

- *CN Yang* Scholar from Physics, Class of 2010
- Foon Yew High School Alumnus, Malaysia
- Top scholar, *CN Yang* Scholars Programme
- Lee Kuan Yee Gold Medalist in Physics
- Dean's list (AY2006-07, AY2007-08)
- Participant, International Conference of Physics Students (ICPS) at Poland (2009)
- Participant, 60th Meeting of Nobel Laureates in Lindau, Germany (2010)
- Emeritus Professor Kiang Ai Kim Fellowship Award

Hear what the *CN Yang* Scholars Alumni say...



“Being a *CN Yang* scholar was a challenging but rewarding experience. I credit the programme with giving me my first taste of life as a researcher, and it spurred my interest to pursue a PhD at the NUS Graduate School for Integrative Sciences and Engineering (NGS). Throughout the programme, I was mentored by many excellent lecturers, and the healthy competition and close bonds of friendship among the small cohort have made the *CN YSP* a special chapter of my life that I will remember fondly for many years to come.”

Kang Kean Lee, Aerospace Engineering, Malaysia STPM

“Science is “to explore, to understand, and to discover”. The *CN YSP* has made fruitful undergraduate research possible. With all the financial and administrative support from this programme, I was given direct access to active research from my freshmen year. I was funded by the programme to present my work in the International Conference for Physics Students, in Graz, Austria in August 2010. Having gained 3.5 years of research experience, I am now ready to continue my quest in biophysics at University of Illinois, Urbana-Champaign.”



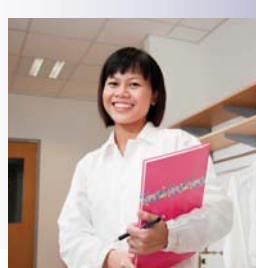
Goh Boon Chong, Physics, Malaysia Chung Ling High School Alumnus



“The *CN YSP* is a major milestone in my life. What has impressed me most is its broad interdisciplinary curriculum that builds a strong scientific foundation for students to pursue their passions. The teachers and mentors are fully supportive, and are always there for the students. The invaluable research experience that I gained from this programme has also become an important asset to my life as a first year medical student at DUKE-NUS Graduate Medical School.”

Sun Wenxin, Biological Sciences, Raffles Junior College Alumna, Singapore

“The *CN YSP* has ignited my passion to shape the future of the scientific world through research and development. The rigorous curriculum of the programme has inculcated in me the ability to adapt and deal with challenges in an ever-changing world. This has proven to be extremely helpful in my postgraduate studies as hard work does not necessarily guarantee good results. I am currently working on dengue, a prevalent disease in Singapore at DUKE-NUS Graduate Medical School.”



Choy Ming Ju Milly, Biological Sciences, Hwa Chong Institution Alumna, Singapore

Hear *what the* **CN Yang** Scholars *say...*



“The *CN YSP* is indeed about putting effort into interdisciplinary studies often beyond the scope of one’s major or even comfort zone. However, more than that, it is also about developing close friendships with like-minded people across all majors. With *CN YSP* as a common ground between all of us, it is possible to forge stronger bonds than with peers of our own major. The best part of *CN YSP*, of course, is the shared fun after all the hard work.”

*Tng Li Hui – Mechanical Engineering
Hwa Chong Institution Alumna, Singapore*

“The *CN YSP* has given me the opportunity of getting to know people from other faculties and academic backgrounds. By coming together as a group, we get to discover various ways of thinking, problem solving, and in my opinion, it should be always one’s goal to appreciate new ideas. Fellow camaraderie has also enriched my university experience. I am truly thankful for the bonds forged and hope that it would last even after we take different paths.”



*Saw Han Lyn – Mathematics & Economics,
Jurong Junior College Alumna, Singapore*



“The *CN YSP* experience is about expanding my boundaries. As part of the curriculum, we had to propose and carry out a research project of interest during the second year of study. The opportunity to join a team to build a Remotely Piloted Vehicle came by. Soon, we were designing and building a small RPV and were flown to China to take part in the National Aeromodelling Competition. The *CN YSP* opened my eyes to the immense potential of UAVs, which inspired me to undertake a Final Year Project on developing a programme for control of UAV swarms.”

*Ng Wu Xin Charles – Aerospace Engineering, St. Andrew’s
Junior College Alumnus, Singapore*



“Being in the *CNYSP* provided me with countless opportunities to pursue my passion to be a scientist. The programme exposes us to various arenas in science and technology, thereby training us in the art of application across different fields. The undergraduate research programme allows us to explore the wonders of science through research as early as year one, under the mentorship of trained professionals.”

*Low Man Ting – Chemistry & Biological Chemistry,
National Junior College Alumna, Singapore*

“The *CNYSP* has given me an early head start in research under the supervision of a very caring professor and alongside outstanding postgraduate students. Its curriculum and specially tailored structure has ignited my passion in engineering, research and the quest for knowledge. It has also provided me with plenty of other opportunities, such as to interview prominent engineering personalities including industry CEOs and cabinet ministers.”

*Kong Cherlynn, Electrical & Electronic Engineering,
National Junior College Alumna, Singapore*



“The *CNYSP* provides me new opportunities, new challenges, new experiences and new friends. With the exciting research experience, the easy access to first-rate facilities and the acquaintance of latest development in science and technology, we widen our horizon and stand out of the crowd as shiny Yangstars.”

He Huiling, Bioengineering, PRC SM2 AP Programme

“Joining the *CNYSP* has opened many doors for self-discovery. I was actively engaged in doing research projects with reputable professors and experts in the field. Given the opportunity to be elected as a member of the Executive Committee, it allowed me to play a pivotal role in the organisation of social events and activities. Being a *CNYang* scholar also encouraged me to venture abroad and interact with people of diverse cultural background, helping me gain a broader perspective of life.”

*Lee Wen Pin Alvin, Materials Engineering,
National Junior College Alumnus, Singapore*



Career PROSPECTS

Our unique curriculum structure and research experience have trained the *CN Yang* Scholars for diverse career paths locally and internationally.

Past *CN Yang* Scholars are pursuing their graduate programme at the following institutions:

- Cornell University (Cornell Presidential Fellowship)
- DUKE-NUS Medical School (A*STAR Graduate Scholarship)
- Graduate School of Integrative Sciences and Engineering, National University of Singapore
- M.D. (Doctor of Medicine), DUKE-NUS Graduate Medical School
- Nanyang Technological University (DSO PhD Research Award)
- Nanyang Technological University (Nanyang President's Graduate Scholarship)
- Purdue University
- Singapore-MIT Alliance for Research and Technology (SMART)
- SMA (NUS-MIT) Dual Masters Programme
- Stony Brook University
- University of Illinois, Urbana-Champaign
- University of Michigan



Others are employed as:

- Associate, International Relations, Ministry of Finance
- Engineer, DSO Laboratories
- Game Programmer, Tecmo Koei Singapore Pte Ltd
- Graduate Analyst, Barclays Capital
- Graduate Design Engineer, DYSON
- Graduate Officer, MAS
- Management Associate, Janssen
- Operation Management Associate, GE Keppel Energy Services
- Process Engineer, Micron Semiconductor Asia
- Process Engineer, Shell Eastern Petroleum
- Procurement Executive, DSTA
- Project Officer, NTU
- Researcher, Protect & Gamble
- Senior Officer, Economic Development Board
- Singapore Air Force Engineer
- Trainee pilot, Singapore Airlines



CN Yang Scholars' Club



The *CN Yang* Scholars' Club (CNYSC) is set up and run by the scholars of *CN Yang* Scholars Programme. The management committee is elected by the scholars on an annual basis.

CNYSC aims to bond together scholars who come from different countries such as Singapore, Malaysia, India, Indonesia, Vietnam and China, and strives to serve all scholars with better welfare and to promote the programme.

Activities are organised for our members to foster friendship such as Freshmen Orientation Camps, get together lunches, exam welfare packages and annual dinner to name a few. The club also organised subsidised overseas visits to well-known universities such as National Taiwan University (NTU) and Korean Advance Institute of Science and Technology (KAIST). In addition, CNYSC has events in collaboration with external organisations such as organising mini hands-on science activities with the Science Centre during school holidays

Club members are always finding opportunities to promote the programme through school visits and talks. Not only that, the club is actively finding partner companies to promote the programme in order to increase the programme profile. More information and highlights of our club can be found at our website.

<http://clubs.ntu.edu.sg/cnysc/>



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