LAUNCH PAD TO EXCITING POSSIBILITIES

Division of Physics & Applied Physics
Direct B.Sc. (Hons) in Physics
School of Physical & Mathematical Sciences
“My favourite part in Physics and Applied Physics (PAP) was that I was involved in undergraduate research projects since my early second year. This allowed me to learn while doing - manipulating ultrafast laser systems; building optical setups; configuring the electronics and programming interfaces from scratch. The involvement in cutting edge physics projects and the dedicated mentorship of three professors over the years played an important part in my learning and shaping of my perspectives.”

Edbert Jarvis SIE
Class of 2008 | SMUK | BPK PENABUR, Jakarta Alumnus | pursuing PhD at MIT - researching on strongly correlated electron systems in condensed matter

“I like that in PAP, students are given ample opportunities to engage in research work from their early undergraduate years. For those planning to pursue a postgraduate degree or research career, these experiences are extremely useful. The most memorable times I had in PAP was while doing my final year project. I later went on to present the results at the International Conference on Materials for Advanced Technologies and had a journal publication on it as well.”

PANG Ai Lin Christina
Class of 2009 | Hwa Chong Junior College Alumna | pursuing joint A*STAR - Imperial College PhD - researching on photovoltaics.

“Launching to Postgraduate Studies in Top Universities

Physics and Applied Physics | NTU

Launching to an Exciting Career

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Launching to an Exciting Career
what some of our graduates are doing now

exciting possibilities

At Physics and Applied Physics (PAP), I enjoyed the freedom to learn and was fortunate to be closely supervised by a few professors. My most memorable moments include the countless number of lunch time chats with many different professors, who invariably talk about their fascinating stories and never fail to impress us or impart a lesson in life.

WANG Shengtao
Class of 2011 | Hwa Chong Junior College Alumnus | pursuing PhD at University of Michigan Ann-Arbor

At Physics and Applied Physics, I have been exposed to mainstream scientific research. The approachable and friendly faculties created an environment conducive for learning and building intellectual confidence. At Physics and Applied Physics, I built my first laser.

Purnawirman HUANG
Class of 2009/2011 (Masters) | SMAN 1 Pekanbaru, Indonesia Alumnus | pursuing PhD at MIT working on photonics microsystems

My four years at Physics and Applied Physics (PAP) prepared me well for my role as a research engineer in Robert Bosch SEA and though the time spent studying physics was difficult, tiring and frustrating, it has developed my perseverance and this helps me in solving scientific problems that I encounter in my work.

KWAN Yue Chau Garen
Class of 2011 | Anderson Junior College Alumnus | Research Engineer at Robert Bosch SEA and con-currently pursuing PhD at NTU

My job involves sourcing, compiling and analysing fiscal, social and economic data used by MOF in formulating government policies. I also help monitor local and international developments that may impact Singapore. At Physics and Applied Physics, solving mind twisting problems in relativity and the abstract quantum mechanics help developed in-depth analytical thinking. The freedom to take electives in business and mathematics also broaden my perspectives – learning cross disciplinary applications.

CHOI Wen Ting | Class of 2011
Class of 2011 | Jurong Junior College Alumnus | Associate (Economics) at Ministry of Finance

Other NTU Physics Graduates currently pursuing PhD

Ma Rui Chao (Harvard University) | Ali Sucipto Tan (UC Berkeley)
Gao Jing (Rochester University) | Wu Xing (Max Planck Institute of Quantum Optics)
Tan Zhi Yong (Rice University) | Chong You Quan (Stony Brook University)
Goh Boon Chong (University of Illinois Urbana Champaign) | Jeremy Hadidjojo (University of Michigan Ann-Arbor)
Mridula Damodaran (Purdue University)

NTU: Ho Hui Wen | Tan Lihao | Huynh Hoai Nguyen | Michael Adrian |
Tee Xian Yang | Xia Bin | Chan Chon U | Azat Sulaev | Indra Purnama |
Kwan Yue Chau | Tai Kong Fai | Wong Wan Chap | Zhang Zhifeng

NUS: Teguh Citra Asmara | Li Suchun | Lim Ci Ji | Ricksen Surya Winardhi |
Teo Yon Shin

Launching to an Exciting Career

Some examples of career options for physics graduates

TECHNOLOGY
DSO National Laboratories, Hewlett-Packard, Sony, Seagate, Samsung, A*STAR, Applied Materials etc.

EDUCATION
Ministry of Education, Nanyang Technological University etc.

PROFESSIONALS
British Petroleum, Singapore General Hospital, National Cancer Center (Singapore), National Environment Agency etc.

COMMERCE AND FINANCE
Ernst & Young, Standard Chartered, Singapore Exchange, Bank of America, Ministry of Finance etc.
Assistant Prof
SUM Tze Chien
Nanyang Award for Excellence in Teaching 2006
Koh Boon Hwee
Scholars Award 2011 (honoured by student Ngiam Song Wee)

Nanyang Assistant Prof XIONG Qihua (Right) (National Research Foundation Fellow) with Muhammad Iqbal Bakti UTAMA (Physics and Applied Physics 4th year)

“I joined Prof Xiong’s research group in my second year and was exposed to the frontier of nanoscience and nanotechnology. I developed a novel methodology to prepare nano-sized structures called semiconductor nanowires and studied their unique physical properties where quantum effects become increasingly apparent. Thus far, I have co-authored three publications: Nano Lett. 2011, 11, 3051, (where I was the first author and the article was featured on the cover of August 2011 Nano Lett.); Adv. Mater. 2011, 23, 1404; and Nano Lett. 2010, 10, 3940.” - Iqbal

Visiting Prof Maria-Elisabeth MICHEL-BEYERLE and Gagik G GURZADYAN having a discussion on the application of ultrafast laser spectroscopy to study the dynamics of biomolecules.

In PAP, we host renowned visiting professors, including Nobel Laureate Prof Rudolph A. Marcus.

Our proximity to the Institute of Advanced Studies (NTU), which regularly hosts international conferences and Nobel laureates, also allows our students to have opportunities to interact with these distinguished researchers.
At NTU Physics and Applied Physics, our research covers both the technological and the theoretical realms of Physics; we construct tiny nanostructures by manipulating atom by atom, probe ultrashort microscopic processes in nature using ultrafast femtosecond lasers... study organic solar cells...analyze vast atmospheric systems...exploring the common themes encompassing theoretical Physics, complex systems and the financial markets; chilling to near absolute zero, we can generate an ‘army’ of gaseous atoms moving in unison...in selected solids, we experiment to find the right conditions to produce exotic states of matter which may have technological applications...we study the behaviour and many applications of empty bubbles in liquids such as fragmentation of kidney stones and non-invasive delivery of medical drugs...we also research on the living - dynamics and structure of the complex DNA; ...the list goes on....anyone interested in invisibility cloaks?
Assistant Prof CHEONG Siew Ann  
Nanyang Award for Excellence in Teaching 2010  
Science Mentorship Programme Outstanding Mentor Award 2010

Assistant Prof CHEW Lock Yue  
Nanyang Award for Excellence in Teaching 2007  
SPMS Teaching Excellence Award 2009

Dr MA Yun  
Physics lecturer at PAP  
conducts fundamental Physics courses.

Yenny WIJAYA  
building a laser system when she was in undergraduate second year. After graduation, she started working at Intel-Micron as workforce development engineer.

Assistant Prof KOH Tiej Yong  
Koh Boon Hwee Scholars Awards 2011 (separately honoured by students Aaron Chiang and Wang Shengtao)

Nanyang Assistant Prof Cesare SOCI  
(winner of ProSPER.NET-Scopus Young Scientist Award) and CHIN Xin Yu  
(Physics and Applied Physics 4th year) discussing about the properties of organic polymers that are useful for plastic solar cells.
"In the Division of Physics and Applied Physics students and professors share the joy in making discoveries together."

Associate Prof PHAN Anh Tuan (centre)  
Acting Head of Division (with students  
Christopher LECH and PHAM Dang Khoa)

"Physics is exciting and physics at NTU is a great and rewarding adventure."

Prof HUAN Cheng Hon, Alfred (left)  
with student QUEK Wei Liang at 2011 PAP nite.

PING PONG DAY  
An opportunity to play a game of ping pong with the professors. Here, we see Prof SHEN Zexiang in action.

STUDENTS AT WORK  
Learning about interferometry  
(Left to right: Students CHOU Kok Loong, LIM Hui Ping, CHAN Zi Yu and TANG Chi Sin)
There are many opportunities for students to go abroad for exchange programs, attend workshops and even conferences.

Whei Yeap on an exchange program in McMaster University in Canada – he also had the chance to visit many US and Canadian cities during the five months there.

**SUEN Whei Yeap**
Class of 2011
SMK St. Michael’s Institution, Ipoh Alumnus

Chern Han (right) having a discussion with Prof Roy Glauber at the annual Lindau Nobel Laureate Meeting in 2010. Chern Han is one of the ten students selected from universities in ASEAN to attend. That year, Singapore universities had two representatives, both from School of Physical and Mathematical Sciences, NTU.

**ER Chern Han**
Class of 2010
Foon Yew High School, Johor Bahru Alumnus

In 2011, Hugh Tay secured a three month internship at CERN where the Large Hadron Collider (LHC) is housed.

“In CERN, Physicists are on the quest of understanding the most fundamental building blocks of our universe – answering questions such as why is there mass; are there higher dimensions etc.”

**Hugh TAY Keng Liang**
Physics and Applied Physics 4th year
Tampines Junior College Alumnus

“I enjoy studying in PAP ever since I enter NTU. The courses are very interesting and my passion towards physics had been greatly increased. The professors, lecturers and tutors I had met are nice and approachable. I can ask for advices whenever I need them. At the end of my first year, I had joined a research group under one of my professors. Throughout the research, I gained a lot of knowledge and experience. After one year in PAP, I know that I have chosen the right path for my future.”

**TAM Qian Xin (centre)**
Physics and Applied Physics 3rd year
Sek Men J Kei Nan Hwa Alumnus
(with PHUA Jun Hao and Kenneth LEE)

“My experience in PAP has been truly enriching. There are many knowledgeable lecturers and tutors that constantly provide guidance and enlightenment in not only concepts about physics, but also about concepts in life. Over the past one year, I’ve gained a great deal of confidence in my own abilities to adapt and succeed.”

**ANG Yuen Siang**
Physics and Applied Physics 3rd year
Victoria Junior College Alumnus