GPS. TV. The Internet. The computer you browse on, the phone you took your selfie with. Much of today’s technology is made possible by physics, or invented by physicists. Just take a look at the supercomputer in your pocket:

**CAMERA**
Digital photography was made possible by the birth of the charge coupled device (CCD), invented by physicist Willard Boyle (Nobel Prize, 2009)

**BATTERY**
Breakthroughs in material physics led to safe, efficient, and high capacity batteries

**TOUCHSCREEN**
Physics-driven innovation translates photorecombination and polymer physics to vibrant and flexible screens

**SPEAKERS**
A thorough understanding of electromagnetic induction has enabled loud speakers in a minute package

A good understanding of the fundamental sciences drives innovation. The physics of today enables the technology of tomorrow.
Physicists aren’t limited to physics. Rigorous training, methodical planning, and painstaking experimentation has created physicists with an analytical mind and a knack for innovation. You might have heard of some of them:

**SIR TIM BERNERS-LEE**
Pioneered the World Wide Web

**FRITS ZERNIKE**
Invented the phase-contrast microscopy, allowing biologists to observe transparent microorganisms

**ALBERT EINSTEIN**
His theories has lead to TVs (photoelectric effect), lasers (stimulated emissions), GPS (general relativity), and more

**ROBERT NOYCE & GORDON MOORE**
Co-founders of Intel, both of whom made incredible advancements in computing technologies

**SEIJI OGAWA**
Discovered fMRI, which enables mapping of brain activity

**LUI PAO CHUEN**
Singapore’s first Chief Defence Scientist & Advisor to National Research Foundation

**ALLEN NEWELL**
Co-pioneered the field of artificial intelligence (AI)

**ELON MUSK**
CEO of SpaceX, Tesla, and more
University. The next big step in your education journey. With so many options and choices, it is natural to ask:

**Is Physics right for me?**

✅ **Physics may be right for you if you value:**
- Innovation and creative thinking
- Disciplinary thinking and domain expertise
- Deep appreciation of knowledge
- Academic rigour
- Solving unconventional problems and pioneering solutions

❌ **Avoid Physics if you:**
- Prefer systems integration over systems innovation; iterative increments over radical redesign
- Like clearly defined instructions and “following the book”
- Hate math, reading, and working hard

**Problem identification and solving**
Graduates are no stranger to problem solving in unfamiliar situations

**Numerical literacy** After 4 years of working with data, numbers, and algorithms, graduates are confident in areas such as analytics and finance

**Modelling and simulation** Modelling stacked heterojunctions can be as challenging as modelling markets; such challenges excite graduates

**Fundamentals and innovation** An appreciation of knowledge is both satisfying and can enable wonderful new technologies
Read their testimonials

Physics majors are trained to excel at tasks such as multivariate trend analysis, modelling, simulation and optimisation; graduates are familiar with computational thinking and data analysis. Coupled with comprehensive domain expertise, numerical literacy, physical intuition and their ability to clearly define problems, they are desirable complements to data- and computing-driven workforces.

I guess we do not have to restrict ourselves to jobs that have direct link to physics because ultimately, it is the problem-solving and logical thinking skills that we have cultivated from our physics education which will aid us in our jobs.”

– Ms Joy Sng, Bsc (Hons) 2019
Medical Physicist

Many useful diagnostics techniques, such as MRI, CT, and PET, are invented by physicists. Modern medicine like proton beam therapy and nanorobotics might hold the key to eliminating many diseases. Medicinal physics aims to improve lives through a better understanding of the fundamental processes and interactions in our bodies.

My physics training empowers me to deal with uncertainty and be my own teacher, eventually finding answers to solve whatever problems at hand. These are very useful skills to my work as an engineer and now a product manager.”

– Dr Wong Loke Yuen, Ph.D (2011)
Global Product Manager
The world is your playground …

ENGINEERING
With an emphasis on complex problem solving, mathematical rigor, and disciplinary thinking, NUS Physics gives its graduates a unique edge in product innovation and validation. Physics-trained-engineers add value to any engineering team due to their understanding of fundamental science, confidence in unconventional problem solving and ability to distil important concepts in any situation.

My physics education has generally cultivated an inquisitive mind in me which is a useful attribute to have as a budding engineer. It has also trained me to take a logical, problem-solving approach in whatever situation I am in.”

– Mr Tan Ren Jie, BSc (Hons) 2016 Capability Development Engineer

FINANCE
After years of rigorous training in optimisation problems and simulations, Physics graduates are comfortable with the concepts of maximisation and growth. Their numerical literacy and ability to identify trends in complicated systems give them an edge over competitors.

It’s true that when taken at face value, Physics and Economics seem to occupy the dichotomous ends of the spectrum, but having been through a double degree course in both Physics and Economics, I have seen how transferable the skill sets are amongst these subjects in terms of the way analysis is conducted and problems are solved!”

– Mr Ryan Goh, BSc & BSSc 2018 G10 Interest Rates Derivatives Trader

Physics is not about knowing how to calculate stuff — that’s a job for Mathematica — but to interpret results, draw conclusions, and devise new explanations or conjectures.”

– Dr Jackson Tan, BSc (Hons) 2009 Postdoctoral Programme Fellow

Find out what our graduates are doing
Physics enables. Physics answers. Here in NUS, we ask important questions and strive to find solutions.

**TECHNOLOGY**

Can we power a smartwatch using only our body heat?

**QUANTUM PHYSICS**

How can we make quantum devices high-performing and practical?

**BIOPHYSICS**

How do we easily manipulate DNA using magnetism?

**ENERGY**

Can we power Singapore using cleaner resources?

**COMPUTATIONAL PHYSICS**

Can we predict the next breakthrough material?

**MEDICINE**

How do we kill localised cancer tumours?

**WEATHER**

How can we predict storms and prepare beforehand?
You craft the experience you desire. Be it academic or enriching, NUS Physics provides opportunities for you to design your dream university experience.

**SPARK THE GAP**
Professors make cutting edge research and difficult concepts accessible to undergraduates.

**Featured talks:**
- Prof Valerio Scarani: Is There Randomness in Nature?
- Prof Tan Meng Chwan: String Theory and 21st Century Mathematics
- Prof Christian Kurtseifer: How Did Physicists Detect Gravitational Waves?

**SEMESTERLY DINNERS**
Students and lecturers bond over meals.

**GERMAN IMMERSION TRIP**
This is a three-week long trip that allows physics students to experience both the culture and the physics research environment in Germany. Students get to visit laboratories at the University of Munich, Max Planck Institutes...

Want to know more? Check out the NUS Physics Society Instagram @NUSPhyssoc