

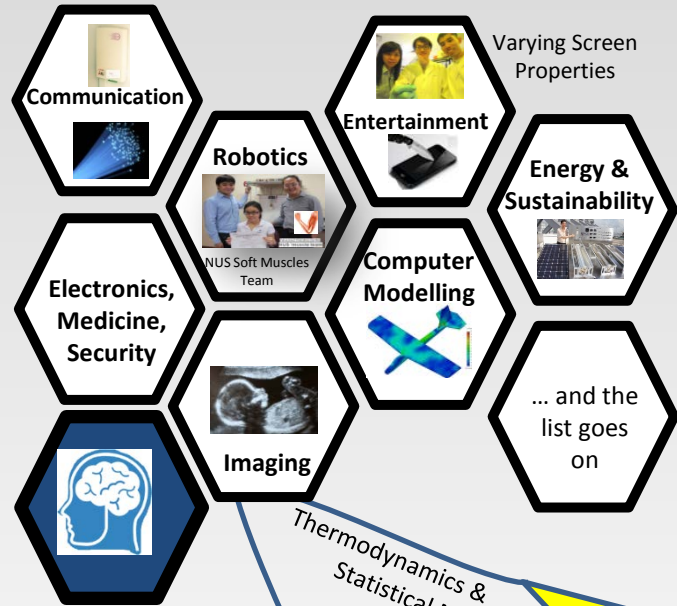


Engineering Science Programme

where we inspire to aspire !

Nurturing a new generation of
Engineer-Scientists
Ready for the cutting edge,
multi-disciplinary R&D
professional career
www.esp.nus.edu.sg

Applications of Engineering Science



What is Engineering Science?

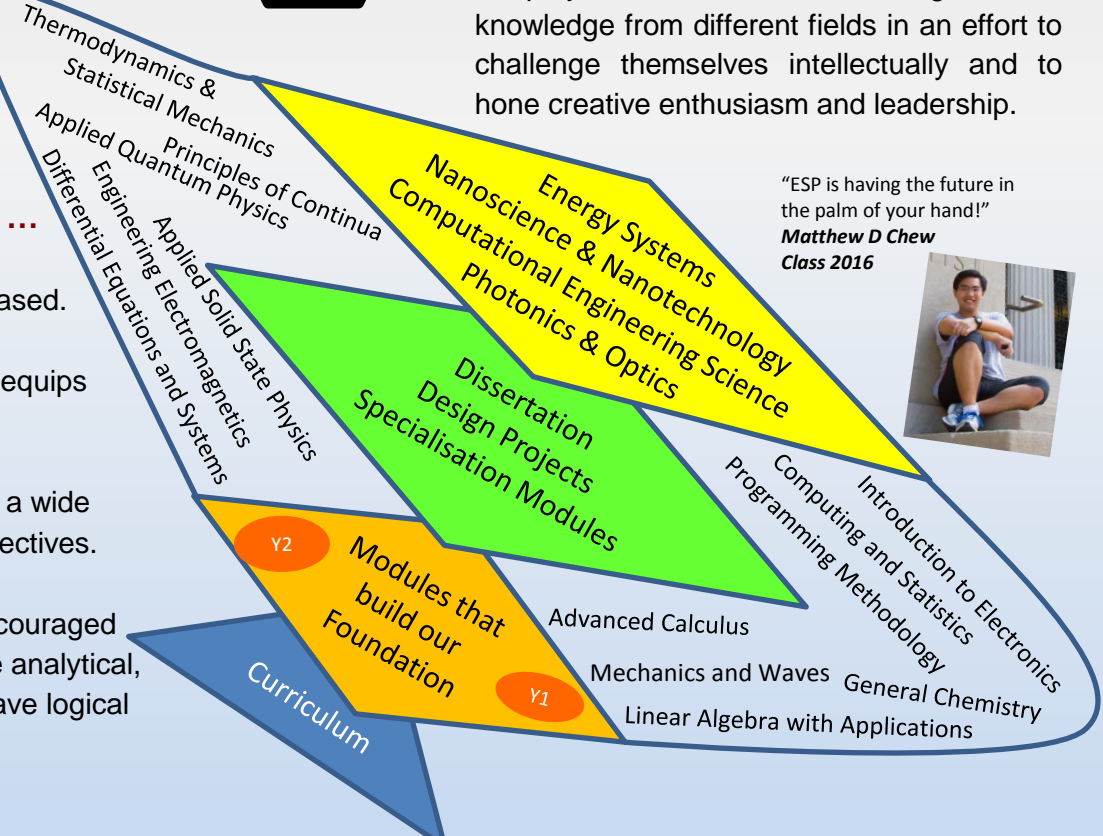
Engineering Science is an amalgamation of the qualities which define an Engineer and a Scientist. Scientists seek to understand WHY and HOW things occur. Engineers apply or transform the Science into workable solutions. Here in ESP, we aim to nurture graduates who are able to FUSE and CREATE new knowledge for Applications in the evolving industries of Tomorrow.

ESP students are required to engage in various open-ended multi-disciplinary hands-on projects that involve the integration of knowledge from different fields in an effort to challenge themselves intellectually and to hone creative enthusiasm and leadership.

Our Curriculum is ...
multi-disciplinary,
rigorous and broad based.

Two-year foundation equips students with strong fundamentals and prepare them for a wide range of advanced electives.

ESP students are encouraged to think differently, be analytical, critical on findings, have logical reasoning and good communication skills.



"ESP is having the future in the palm of your hand!"
Matthew D Chew
Class 2016





"I'm glad to have chosen to read ESP. I truly enjoyed the experience. As the cohort was small, we were a tight-knit group. The multidisciplinary nature of the course has also given me the option to choose extremely interesting final year project that have real world applications"
Choo Min, Class 2010
 Physician researcher in Singapore hospital



"Although it may appear unrelated, all the modules in ESP integrate together to give the big picture. That's what the industry would be like. Definitely helpful to those who wish to be scientists and engineers. ESP has honed my critical thinking skills and is more disciplined in the way I work."
Foo Wei Jian, Class 2012
 Engineer, DSO National Laboratories



"The best engineering course that provides ample hands on learning opportunities"
Melvin Ang, Class 2013
 Engineer, Schlumberger Limited

ADMISSION ENQUIRIES

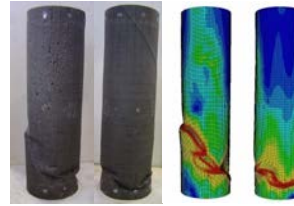
Office of Admission
 University Town, Stephen Riady Centre
 2 College Avenue West #01-03
 Singapore 138607
 Tel : +65 6516 1010
www.nus.edu.sg/oam/contactus/contact.html

PROGRAMME ENQUIRIES

Engineering Science Programme Office
 Tel : +65 6516 3354
www.esp.nus.edu.sg

Computational Engineering Science (CES)

If you like using mathematics, physics and mechanics to create mathematical models, if you find excitement in discovery process through the use of simulations, visualization and computation of complex scientific and engineering problems, then CES is for you.



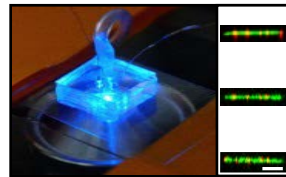
Modeling and simulation of corroded pipes

What can you do?

Computational engineered simulations and modelling to aid investigations and designs e.g. use of computational modeling in the design of Boeing 777; Energy, Biomedical, Photonics, Mechanical, Structural, Electronics applications and industries; software engineer, IT analyst, etc.

Modules : Continuum Mechanics, Numerical Analysis, Finite Element Analysis, Mathematical Methods, ...

Nanoscience and Nanotechnology (NANO)



Mapping of DNA

This specialisation educates students to understand structures and materials at the nanometer scale. Students learn how to control shapes and sizes at the nanometer scale to create designs of smaller, lighter, and better performing materials, components or systems e.g. creation of the varying properties of films for electronic gadgets, new materials for construction industry, DNA analysis in the medical industry, ...

What can you do?

Nanostructured materials engineering; Nano-electronics/Optoelectronics industry; Materials engineering, etc.

Modules : Surface Physics, Nanophysics, Molecular Modelling, Making Nano & Probing Nano, ...

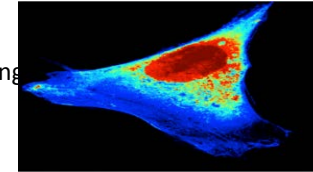
Which specialisation is for you?

Photonics and Optics (PO)

Photonics and Optical technologies have become common terminologies in the modern world. The use of light has been employed in fields ranging from imaging to communications. In the PO specialization, we teach students to use light and electromagnetic radiation in various cutting edge areas of applications e.g. advanced imaging, photonic devices, lasers, optical communication, optical materials, etc.

What can you do?

Medical Engineering, Imaging industries; Manufacturing; Defence research, Security; Optoelectronics communications, etc.



Ion microscope image of a cell

Modules : Signals & Systems, Modern Optics, Nanophotonics, Bio-medical Imaging Systems, ...

Energy Systems (ES)

Students in the ES specialisation will have an understanding of the production and conversion of various forms of energy. It addresses renewable and non-renewable energy sources. Students learn some of the most pressing problems in terms of energy generation, storage and management.



Optimising Air-conditioning Plant

What can you do?

Solar and Clean energy industries; Energy harvesting; Energy storage; Lithium battery industries; Building and Industrial energy systems; Electric vehicles, Micro-grid related applications, etc.

Modules : Energy Conversion Processes, Electrical Energy Systems, Transport Phenomena in Energy, Photovoltaic Devices and Systems, ...