List of Staff

Arvind Rajendran (Ph.D. ETH Zurich)
Chen Wei Ning, William (Ph.D. U Catholique de Louvain)
Chen Yuan (Ph.D. Yale)
Chew Sing Yan (Ph.D. Johns Hopkins)
Ching Chi Bun (Ph.D. Aston)
Chiang Rongrong (Ph.D. Georgia Tech)
Kunn Hadinoto-Ong (Ph.D. Purdue)
Lau Wai Man, Raymond (Ph.D. Ohio State)
Lee Jong Min (Ph.D. Columbia)
Leeong Susanna (Ph.D. Cambridge)
Lim Kok Hea (Ph.D. TU Munich)
Loo Sun Sun, Leslie (Ph.D. MIT)
Mary Chan (Ph.D. MIT)
Matthew Chang (Ph.D. Maryland)
Mohammad Amin Ullah (Ph.D. ETH Zurich)
Ng Siew Choon (Ph.D. Oxford)
Tan Thatt Yang, Timothy (Ph.D. UNSW)
Vincent Chan (Ph.D. Pennsylvania)
Wang Xin (Ph.D. HKUST)
Xu Rong (Ph.D. NUS)
Yang Yanhui (Ph.D. Yale)
Zaher Judeh (Ph.D. UNSW)

Facilities

The School is housed in two buildings totaling 30,000 square meters, providing learning experiences essential to a first-rate education in chemical and biomedical engineering. The buildings are designed with ample room to conduct lectures and tutorials in seminar style, undergraduate laboratory work and postgraduate research. By every measure, the facilities are set to emphasise a quality learning environment – from state-of-the-art laboratory equipment and high-tech teaching stations to aesthetically soothing interior design conducive for learning and research.
Introduction
The School of Chemical and Biomolecular Engineering (SCBE) at Nanyang Technological University (NTU) aims to empower a new generation of engineers through a rigorous curriculum that integrates principles of engineering with fundamentals of life and chemical sciences. With its dynamic faculty from internationally renowned institutions, modern facilities and state-of-the-art research and teaching facilities, the School provides a stimulating learning environment and opportunities for students to identify and pursue personal and professional goals.

Goals and Missions
The School aims to provide educational experiences that facilitate the students to:

- gain thorough understanding of the fundamentals of life and chemical sciences.
- creatively solve challenging problems in chemical and biomedical engineering and related areas while understanding the implications of such solutions on the society.
- develop good communication and management skills through team work in the execution of experimental and design projects.

Programme in Chemical and Biomolecular Engineering
The School offers a four-year undergraduate degree programme in Chemical and Biomolecular Engineering (CBE). Upon graduation, successful students will be awarded direct honours. The programme amalgamates principles of chemical engineering and the sciences (biology, biochemistry and genetics) to facilitate the students to:

- gain thorough understanding of the fundamentals of life and chemical sciences.
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- develop good communication and management skills through team work in the execution of experimental and design projects.

Admission Requirements
In addition to satisfying the general entry requirements of NTU, candidates seeking admission to the CBE undergraduate programme must have a minimum of HD level (or equivalent) passes in Chemistry and Mathematics and a GCE ‘O’ Level (or equivalent) pass in Physics. An ‘O’ Level (or equivalent) pass in Physics is only applicable to candidates without HD level (or equivalent) pass in Physics.

Candidates with relevant diploma from local polytechnics may apply for admission. Eligible candidates who hold a diploma with merit / distinction may be considered for direct entry into the second year of the programme (i.e. completion of the programme in three years). Other eligible candidates may be admitted into the first year with exemption of courses granted on a case-by-case basis.

Overview of the Curriculum

Foundation courses (Year 1)
- Chemical sciences
- Biological sciences
- Physical sciences
- Engineering mathematics

Principles of Chemical & Biomolecular Engineering (Year 2 and 3)
- Chemical sciences
- Biological sciences
- Physical sciences
- Engineering mathematics

Effective / Specialisation (Year 4)
- Biotechnology & therapeutic engineering
- Nanotechnology & reaction engineering
- Industrial chemistry & process engineering
- Pharmaceutical engineering

Overview of the Curriculum

- Chemical sciences
- Biological sciences
- Physical sciences
- Engineering mathematics

Chemical and Biomolecular Engineering (CBE)
Chemical engineering found its roots in 1930s and ever since has been consolidated into a key manufacturing sector. Chemical engineering concerns the large-scale conversion of naturally available raw materials, effecting a chemical or physical transformation, to valuable products. The chemist develops ways of synthesising a particular chemical and the chemical engineer with his knowledge of chemistry combined with engineering principles translates the synthesis into an inherently safe, economically profitable and environmentally benign process for large-scale manufacturing intended for commercial applications.

In the past decade, a wealth of knowledge has been created towards understanding the fundamental mechanisms of developing biological processes from the molecular level to large-scale industrial production. This area termed biomolecular engineering is an emerging area of academic and industrial interest. Chemical engineers, combining their knowledge with the principles of life sciences (biology, biochemistry and genetics), are making important contributions to the developments of biological processes for the production of pharmaceuticals, specialty chemicals and other biological products. This knowledge has also been effectively used for the processing of industrial organic waste, thus keeping the environment clean.

In the modern world, it is hard to imagine an aspect of life that is untouched by chemical and biomolecular engineering. The gasolines that run cars and airplanes; fertilizers and food preservation techniques that feed the growing population; catalytic converters that reduce noxious pollutants that come out of motor cars; bio-pharmaceuticals that have potential to treat diseases; products such as motor fuels that come out of motor cars; bio-pharmaceuticals; specialty chemicals, food & flavours; fragrances, nanotechnology and others.

Employment Opportunities
Chemical and biomolecular engineers obtain training in diverse areas and hence possess flexibility to adapt to different industrial sectors. The chemical and pharmaceutical sectors constitute a key part of Singapore’s constellation of industries. Graduates can find challenging opportunities in traditional as well as emerging engineering fields such as petrochemicals, bio-pharmaceuticals, specialty chemicals, food & flavours / fragrances, nanotechnology and others. For the creative and adventurous, the opportunities are limitless!

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UNIQUE FEATURES

- Strong grounding in the fundamentals of chemical and biomolecular engineering principles.
- Rigorous training in systematic problem solving skills.
- Multi-disciplinary training in emerging chemical and biomolecular engineering areas.
- Industrial attachment – Valuable experience either at local or overseas firms in manufacturing or R&D.
- Global Immersion Programme (GIP) – Opportunities for six-month stints in one or more of the following countries: China, India, France, Switzerland and USA.
- Accelerated Bachelors Programme (ABP) – Fast track programme enabling completion of undergraduate degree in three and a half years.
- Undergraduate REsearch on CAmpus (URECA) programme – Opportunities for research attachments within NTU.

ACCRREDITATION
The degree programmes in Chemical and Biomolecular Engineering is accredited by the Engineering Accreditation Board (EAB) of the Institution of Engineers Singapore (IES).

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* Students need to satisfy certain requirements to be eligible for these special programmes offered by NTU.