

CHEMICAL ENGINEERING



cde.nus.edu.sg/chbe



Chemical engineers design processes and equipment for large-scale chemical conversion of raw materials into useful products in a safe, sustainable and economical way. Chemical engineers also manufacture chemicals, fuels, plastics, electronics, pharmaceuticals, food and beverages, even consumer goods, such as detergents, toiletries and textiles. Today they even use their knowledge of chemistry, physics, biology and math to invent new technologies for cleaning-up the environment and pioneer new developments in recycling, clean energy, medicine and biotechnology.



You will learn about chemical processes involving thermodynamics, chemical reactions, mass and energy balances, fluid dynamics, separation processes and biological phenomena, as well as process design and control – all these will be put into practice in a capstone design project to ensure you consolidate your skills and knowledge.



NUS Chemical and Biomolecular Engineering

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Future Career Options:

You can find employment in a broad range of roles in almost any sector where products are manufactured on a commercial scale, such as:

- **Biotechnology**
- **Chemicals**
- **Energy**
- **Environmental health and safety**
- **Petrochemicals**
- **Pharmaceuticals**
- **Semiconductors**



NUS Chemical Engineering has been ranked **consistently among the world's top 10** in QS University Rankings by Subject.



Chemical engineering is distinct from chemistry with its **emphasis on practical applications** for the commercial production of products and its related processes.

ADMISSION REQUIREMENTS

Course	'Singapore-Cambridge GCE 'A' Level	International Baccalaureate (IB) Diploma	NUS High School Diploma	Test or Interview
Architecture	Pass in H1 Chemistry or Mathematics or Physics; or pass in 'O' level Additional Mathematics	Pass in SL Chemistry or MAA or Physics; or HL MAI	Good Major CAP in Mathematics or Physics or Chemistry	Yes
Computer Engineering	'Pass in H2 Mathematics or Further Mathematics; and either H2 Physics, Chemistry or Computing	Pass in HL MAA; and HL Physics or Chemistry or Computer Science	Good Major CAP in Mathematics and either Physics or Chemistry	No
Biomedical Engineering Chemical Engineering Civil Engineering Electrical Engineering Engineering Science Environmental Engineering Industrial & Systems Engineering Infrastructure & Project Management Materials Science & Engineering Mechanical Engineering	Pass in H2 Mathematics or Further Mathematics	Pass in HL MAA	Good Major CAP in Mathematics	No
Industrial Design	Pass in H1 Mathematics or Physics or Economics or Art; or pass in 'O' level Additional Mathematics	Pass in SL MAA or Physics or Economics or Visual Arts; or HL MAI	Good Major CAP in Mathematics or Physics or Arts	Yes
Landscape Architecture	Pass in H1 Chemistry or Mathematics or Physics; or pass in 'O' level Additional Mathematics	Pass in SL Chemistry or MAA or Physics; or HL MAI	Good Major CAP in Mathematics or Physics or Chemistry	Yes
Double Degree in: Engineering & Business Administration Engineering & Economics	Minimum prevailing admission criteria of both courses			No
Double majors & minors in Engineering	Minimum prevailing admission criteria of the Engineering course			No
Special Programmes: Engineering Scholars Engineering & Medicine Track	Will be considered if admitted to the Engineering course			Yes

Polytechnic graduates with an accredited diploma can apply. Please visit:

<https://www.nus.edu.sg/oam/apply-to-nus/polytechnic-diploma-from-singapore/admissions-requirements>.

International applicants with international qualifications can also apply. Please visit:

<https://www.nus.edu.sg/oam/apply-to-nus/international-qualifications/admissions-requirements>.

Footnote for IB applicants

MAA = Mathematics: Analysis and Approaches

MAI = Mathematics: Applications and Interpretation

Applicants with IB Diploma obtained in Nov 2020 or earlier, please visit:

[https://www.nus.edu.sg/oam/apply-to-nus/international-baccalaureate-\(ib\)-diploma/subject-pre-requisites](https://www.nus.edu.sg/oam/apply-to-nus/international-baccalaureate-(ib)-diploma/subject-pre-requisites)

FREQUENTLY ASKED QUESTIONS

1. What will an education at CDE entail?

An education at CDE will be an exciting, interdisciplinary experience for students where their learning journey takes centre stage. We are equipping students with an adaptable toolbox of skills across disciplines, moving them beyond a knowledge-based education to a mindset-based approach to problem-solving.

The CDE Common Curriculum provides a broad intellectual foundation on which you can continuously upgrade, evolve and re-pivot in a fast-changing world. Our majors build on top of the common curriculum to allow you to explore your chosen field, and our unrestricted elective space gives you the freedom to customise your educational experience.

2. Are there any new courses or combinations offered? Do prospective students still apply to CDE directly?

To get the latest on CDE's wealth of courses and combinations, please refer to <https://cde.nus.edu.sg/undergraduate/apply-to-cde> for more details.

3. What is the difference between common admissions and direct admission courses?

The common admissions "Engineering" course has a single set of entry requirements. If you are admitted to this common admissions course, you have access to any one of the 10 majors in the common admissions pool; which one you choose is up to you. In contrast, each of our direct entry courses have their own admissions requirements. If you gain admission to one of our direct entry courses this will predetermine which degree programme you will follow, be it Architecture, Computer Engineering, Industrial Design, or Landscape Architecture.

4. If I select Engineering common admissions, will a major be assigned to me?

If you select Engineering as one of your choices, you will then be asked to declare a preferred major. Alternatively, you can also choose "Major to be Decided" and decide on your major at the point of matriculation.

5. If I select Engineering common admissions, is my choice of major guaranteed?

Yes, if you are admitted to the Engineering common admissions course you can choose any one of those 10 majors and will have a place in the major of your choice.

6. What subjects should I take to get into CDE?

This depends on two things, your pre-university qualification and which of our degree programmes you are interested in. For our Engineering common admissions course, A-level students should take H2 Mathematics, and IB students should take HL Mathematics: Analysis and Approaches. Polytechnic

students should have an accredited diploma. Our direct admissions courses have different admissions requirements. The details can be found here <https://www.nus.edu.sg/oam/apply-to-nus>

7. Is a qualification in Physics a requirement for Engineering courses?

No. The only pre-requisite for the Engineering courses is H2 Mathematics for Singapore-Cambridge GCE 'A' level applicants. A H2 Physics qualification would be an advantage, but not a requirement. Some of our higher-level engineering modules in certain engineering majors do require H2 Physics as a prerequisite. Students without Physics would therefore need to do bridging modules on their own whilst in NUS.

8. What does "build your own degree" mean?

The new curriculum structure includes 10 modules of Unrestricted Electives (UE), which you can use to decide how broad, deep or integrated you want your education to be. If you wish to go deeper within your chosen discipline, you can opt to read a specialisation (or two) within your UE space. If you prefer instead to broaden your knowledge and skills in a complementary or contrasting area, consider taking a minor or second major.

9. Am I allowed to read second majors and minors outside CDE?

Yes, certainly. NUS is a comprehensive university, and you will have access to all second majors and minors offered by our various Faculties and Schools.

10. Do I have to decide on a second major or minor at the point of application, or can I decide later?

A short list of curated double major and major-minor combinations is available at the point of application. However, this list contains only a small fraction of the 1000+ possible combinations that are available. Upon matriculation, you are welcome to declare or apply for a second major or minor, up until your fifth semester of study.

11. I am a polytechnic diploma holder and I wish to join NUS with advanced placement credits / receive exemptions. How will CDE's new curriculum affect me and will I benefit from it?

All students have 40 Modular Credits (MCs) of Unrestricted Electives (UEs). Polytechnic intake students are exempted from 20 MCs of UEs, so you will still have 20 MCs left to obtain a minor or specialisation without extending your candidature. You may also be eligible to receive additional exemptions for Common Curriculum or major requirements, depending on your polytechnic diploma.