NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

Master's Programs in CCEB, NTU Singapore

8 September 2025

Chemistry & Chemical Engineering @ NTU

8th
QS WUR Ranking by Subject Chemistry 2025

3rd
U.S.News & World Report Best Global Universities for Chemistry 2024

26th
Times Higher Education by Subject Physical Science 2025

10th
QS WUR Ranking by Subject Chemical Engineering 2025

13th
U.S.News & World Report Best Global Universities for Chemical Engineering 2024

14th
Times Higher Education by Subject Chemical Engineering 2025

排名	國家	學校名稱(英)	學校名稱(中)
1	美國	Massachusetts Institute of Technology (MIT)	麻省理工學院
2	英國	Imperial College London	倫敦帝國學院
3	美國	Stanford University	史丹佛大學
4	英國	University of Oxford	牛津大學
5	美國	Harvard University	哈佛大學
6	英國	University of Cambridge	劍橋大學
7	瑞士	ETH Zurich - Swiss Federal Institute of Technology	蘇黎世聯邦理工學院
8	新加坡	National University of Singapore (NUS)	新加坡國立大學
9	英國	University College London (UCL)	倫敦大學學院
10	美國	California Institute of Technology (Caltech)	加州理工學院
11	香港	The University of Hong Kong	香港大學
12	新加坡	Nanyang Technological University, Singapore (NTU)	新加坡南洋理工大學
13	美國	University of Chicago	芝加哥大學
14	中國	Peking University	北京大學
15	美國	University of Pennsylvania	賓夕法尼亞大學

Research @ Chemistry

- Nanomedicine
- Polymer Materials
- Imaging/sensing
- Ultrafast spectroscopy

- **Synthesis Chemistry**
  - -reaction development
  - -complex molecule synthesis
- **Homogeneous Catalysis**
  - -transition metal catalysis
  - -organocatalysis
  - -photocatalysis
  - -electrocatalysis
  - -electrophotocatalysis

Chemistry: Renowned Scientists

Organic


Distinguished University Professor


Professor (President's Chair) (NRF** Investigator)


Professor (Chair, CCEB#)


Professor


Assistant Professor


Nanyang Assistant Professor


Professor


Associate Professor

Inorganic & Organometallic


Associate Professor


Professor (NRF** Investigator)


Associate Professor


Nanyang Assistant Professor


Associate Professor


Senior Lecturer

Materials


Lee Soo Ying Professor


Professor (NRF** Investigator)


Professor (MSE##) (President's Chair Professor)


Associate Professor


Nanyang Assistant Professor


Professor


Nanyang Assistant Professor

Physical


Associate Professor


Emeritus Professor


Associate Professor (Associate Dean (Academic))


Lecturer


Professor

Biological


Professor


Nanyang Assistant Professor (NRF Fellow)

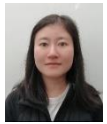

Assistant Professor

Analytical


Associate Professor

Computational


Assistant Professor


Nanyang Assistant Professor


Senior Lecturer

Food Science


Assistant Professor

Legend:
*NRF** - National Research Foundation*
CCEB# - School of Chemistry, Chemical Engineering & Biotechnology
MSE## - School of Material Science & Engineering

Practical & Impactful Research

01

Prof. Yanli Zhao

Executive Editor ACS Appl. Nano Mater.

Expert in Supramolecular Chemistry

02

Prof. Robin Chi

World leader in organocatalysis

Asymmetric Carbene Organocatalysis

03

Prof. Xing Yi Ling

***Editor-in-Chief** ACS Applied Materials & Interfaces*

Environmental Sensing & Early Warnings of Threatened Miscarriage

04

Prof. Teck Peng Loh

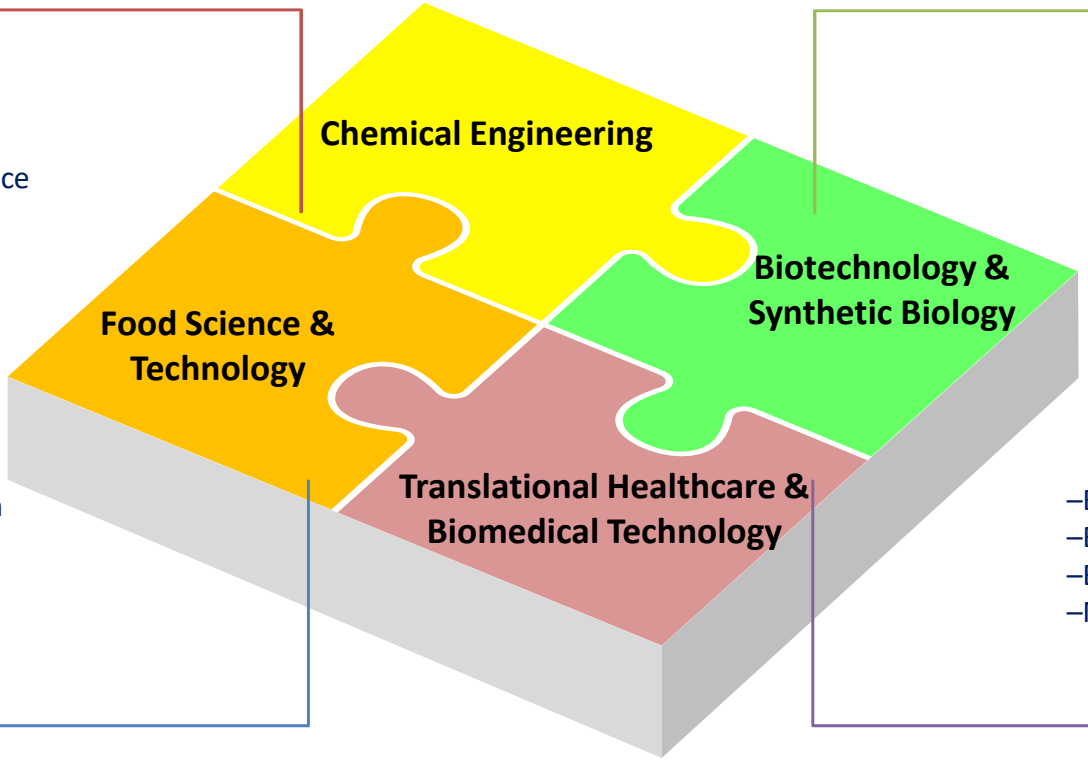
World leader in organic chemistry; Associate Editor J. Org. Chem.

President's Science Award 2018

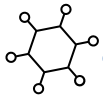
Research @ Chemical Engineering & Biomedical Engineering

–Heterogeneous catalysis
–Reaction engineering
–Colloids & interface science
–Energy technologies

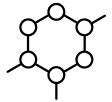
–Bioprocesses
–Biocatalysis
–Protein engineering
–Systems biology



–Sustainable food production
–Food waste conversion
–Nutrition
–Food security



–Biomedical devices
–Bioimaging
–Biosensors,
–Monitoring technologies



Faculty in Chemical Engineering (18)

Heterogeneous Catalysis


R. Xu


W. R. Leow


T. S. Choksi

Reaction engineering


R. Lau


W. Liu

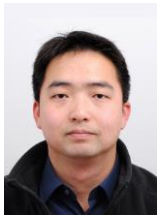

Z. Jiang


A. Iddya

Materials


M. Chan


G. Bazan


R. Ni


P. Gunawan

Process system engineering


X. Yin


M. Bansal

Drug Delivery /Development

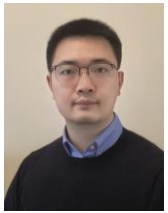

J. Zaher


H. K. Ong


T. Tan

Food science & technology


W. Chen


L. Chen

World-Renowned Expertise in Chemical Engineering

01

Prof. Mary Bee Eng Chan

President's Chair in Chemistry, Chemical Engineering & Biotechnology

Expert in Nanoscience & Polymer

02

Prof. William Wei Ning Chen

Michael Fam Chair Professorship, Food Science & Technology

Expert in Food Science & Technology

03

Prof. Rong Xu

Associate Editor of Journal of Catalysis, Energy Chem

Expert in Catalysis & Sustainable Energy

04

Prof. Guilermo Carlos Bazan

Director of the Institute for Digital Molecular Analytics & Science (IDMxS)

Expert in Polymer & Organic Solids

Faculty in BioMedical Engineering (18)

Biosensor Medical Devices


P. Chen


H. W. Duan


S. M. Park


T. S. Pui

Biotechnology / Nanotherapeutics


W. Chan


K. Pu

Biomaterials / Cell Engineering


S. Y. Chew


J. Song


T. T. Dang


W. Zhao


S. Smith

RNA/ Protein/ Vector Engineering


M. H. Tan


S. Lim

Bioimaging / Biophotonics


L. Schmetterer


T. Ling


K. Liang

Digital Biomedical Engineering


X. Shen


C. W. Ong

World-Renowned Expertise in Biomedical Engineering

01

Prof. Warren Chan

Dean, College of Engineering, President's Chair in Engineering, Executive Editor of ACS Nano

Expert in Nanoscience & Polymer

02

Prof. Kanyi Pu

President's Chair in Biomedical Engineering
Associate Dean (Research), College of Engineering, Editor of JACS

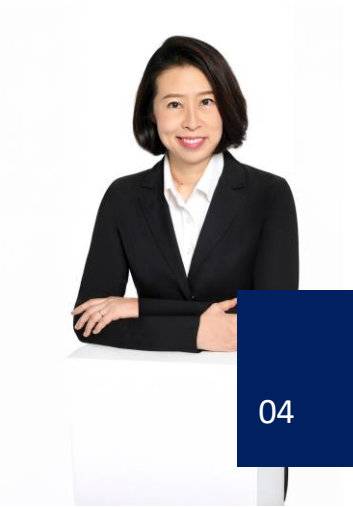
Expert in Molecular Optical Imaging & Molecular Probe Design

03

Prof. Hongwei Duan

Assistant Chair (Research & Graduate Education)
Programme Director (MSc Biomedical Engineering)

Expert in *in-vitro* Diagnostics & Bionanomaterials for Drug Delivery



04

Prof. Juha Song

Director of Bioengineering Programme

Expert in Bioinspired Functional Materials & Biomedical Materials

Postgraduate Programs

The School of Chemistry, Chemical Engineering & Biotechnology (CCEB) offers 8 postgraduate programs:

Postgraduate programs by research

- Doctor of Philosophy in Chemistry
- Doctor of Philosophy in Chemical & Biomedical Engineering
- Master of Science in Chemistry
- Master of Engineering in Chemical & Biomedical Engineering

Postgraduate programs by coursework

- Master of Science in Chemical Sciences & Instrumentation (MSCSI)
- Master of Science in Chemical Engineering (MScCE)
- Master of Science in Biomedical Engineering (MScBME)
- Master of Science in Chemical Modelling (MScCM)**

**Starting in 2026

Key Information about the MSc Programs

Led by faculty from **CCEB**, with courses by **Language & Communication Center** (LCC) & **Nanyang Technopreneurship Academy (NTUpreneur)**
1 year (3-trimesters, full-time) **2 years** (6-trimesters, part-time)
Intended for **fresh graduates** & **working adults** who have degrees in chemistry, chemical engineering, & biomedical engineering interested in upgrading & management
Industry partners highlighted a need for critical thinking, problem solving, data analytics, & troubleshooting skills

Uniqueness of Program MSCSI

- Holistic, with a focus on imparting transferable soft skills, e.g. writing, public speaking, & teamwork
- Multidisciplinary training ideal for management track
  - E.g. Statistics, information technology, programming, data analytics, biosynthesis
- Theoretical & practical training, troubleshooting on industry-relevant advanced chemical instrumentation
- Specialization in Synthesis and Life Sciences or Analytical and Nanotechnology
- Exposure to the latest chemistry research
  - E.g. nanotechnology, artificial intelligence
- Optional internship

Uniqueness of Program MScCE

Cater to the needs of the industry

- Reaction engineering, thermodynamics
- Process technology, process control
- Engineering case studies, project management, decision-making tools

Keep up with new trends in the job market

- Data analytics, process safety management, pharmaceutical production, biomedicine

Flexible and diverse course structure

- Students can choose electives that suit their interests and career plans in the three major fields of chemistry, chemical engineering, & biomedical engineering

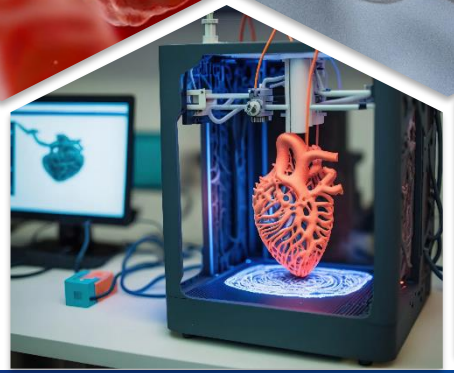
Research opportunities (optional)

- Complete independent research projects in world-class laboratories

Uniqueness of Program MScBME






Cater to the needs of the industry

- Biomaterials, biomedical instrumentation
- 3D printing for biomedical applications
- *In vitro d*iagnostics, bionanotechnology, microfluidics

Keep up with new trends in the job market

- Data analytics, project management, entrepreneurship

Specializations (optional)

- Bioanalytical & diagnostic technology
- Biotechnology & pharmaceutical engineering

Research & Internship opportunities (optional)

- Complete independent research projects in world-class laboratories
- Take up professional internships in well-established industry partners

NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

School of Chemistry, Chemical Engineering and Biotechnology
College of Engineering • College of Science

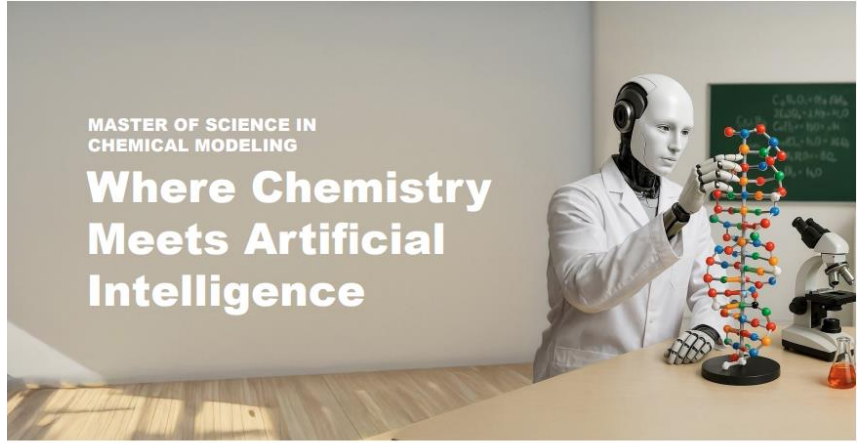
Master of Science in

Chemical Modeling

Chemical modeling drives innovation in green chemistry, drug development, and materials science by solving complex molecular problems.

Career Prospect

- Biomedical Modeling
- Industrial Modeling
- Research & Academia



WHAT IS THE MASTER OF CHEMICAL MODELING DEGREE?

Chemical modelling and machine learning are reshaping modern industries—from designing next-generation drugs to sustainable materials. This interdisciplinary programme equips students with cutting-edge skills to drive innovation in Singapore's chemical, biomedical, and tech sectors.

WHO IS IT FOR?

The MSc Chemical Modeling is for:

- Science and engineering graduates
- Professionals seeking upskilling in chemical data modeling
- Those aiming for careers in R&D, pharmaceuticals, or sustainability

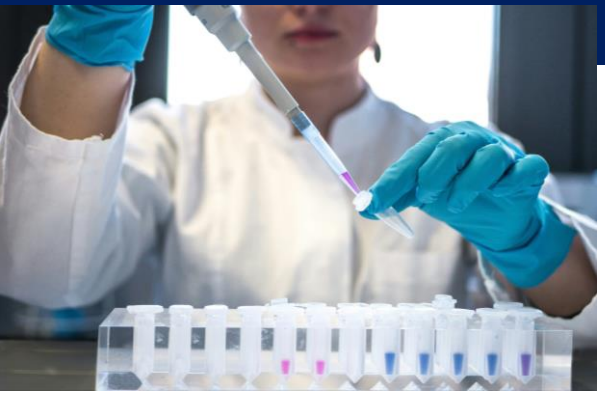
WHAT IS IN IT FOR ME?

- **Core Focus**: Quantum chemistry, molecular modeling, machine learning
- **Interdisciplinary**: Chemistry, Chemical engineering, Bioengineering
- **Industry-ready**: Real-world case studies & computational tools
- **Flexible Format**: Night & hybrid classes for working professionals
- **Career Boost**: Aligned with Singapore's RIE2025 tech goals

Course Summary

- Molecular Modeling & Simulation
- Quantum Chemistry & Reaction Mechanisms
- AI & Machine Learning for Chemical Processes
- Computational Materials & Catalysis Design
- Data-Driven Optimization & Predictive Analytics

Employment Prospects



Chemical Analysis

Career Prospects in Public Service

- Forensic Science
- Chemical Analysis
- Health & Safety
- Teaching
- Intellectual Property Management

Petrochemicals

Career Prospects in the Private Sector

- Petrochemicals
- Specialty Chemicals
- Semiconductor
- Process Engineering
- Quality Control / Quality Assurance (QC/QA)
- Pharmaceutical

Semiconductor

- Water Management
- Scientific Instrumentation
- Research
- Intellectual Property Creation
- Consultancy
- Urban Farming
- Alternative Proteins
- Carbon Capture

Employment Prospects


Healthcare & Research

- National University Hospital
- Jurong Health
- LKC-Medical School
- A*STAR, etc.

Medical Technology

- 3M
- Medtronic
- GE Healthcare
- Johnson & Johnson
- Biotronik, etc.

Pharmaceutical & Biotechnology

- GSK
- Thermo Fischer Scientific
- Roche
- Edwards Lifesciences, etc.

Admission & Graduation Requirements

Admission

- Bachelor's degree in Chemistry, Materials Science, Chemical Engineering, or related majors with at least 2nd Upper Honours
- TOEFL (85)/IELTS (6.0) required for graduates of universities with non-English medium of instruction

Graduation

Students graduate after completing 30 AU & CGPA at least 2.50 out of 5.00.

Core Courses	12-15 AU
Elective Courses	15-18 AU
Minimum Total	**30 AU**

Admission Timeline

Admission Stage	Date / Deadline
Application	Nov 2025 to Jan 2026
Offer and Acceptance	Dec 2025 - Mar 2026 (on rolling basis)
Matriculation	Jul 2026
Orientation	Jul 2026
Course Commencement	Aug 2026

Program Fees

Academic Year 2026/27	
MSCSI	S$42,000 TWD996,692
MScCE, MScBME, MScCM	S$46,800 TWD1,110,600

These fees are listed in Singapore dollars (S$) & do not include the prevailing Goods & Services Tax (GST).

S$1 ~ TWD 23.73

Proposed Collaboration: 4+1 Integrated Program

Phase I

- 4 years of undergraduate studies in Home University
- Graduates should have a minimum cGPA of 3.2/4.0 (or 80%)
- English language requirement of 100 for TOEFL or 6.5 for IELTS (2-year validity from application date)

+

Phase II

- ***Early admission*** to Nanyang Technological University for MSc programs:

1. MSc (Chemical Sciences & Instrumentation)
2. MSc (Chemical Engineering)
3. MSc (Biomedical Engineering)
4. MSc (Chemical Modelling)

Living in Singapore
Clean, Safe & Multicultural

Cost/Month	Estimate (S$)
Accommodation (On-Campus)	$470-$688
Accommodation (Off-Campus)	$500-$1500
Meals	$300-$800
Local Transport	$80-$200 (bus & train)
General Expenses	$100-$630





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cceb-bme@ntu.edu.sg

cceb-msccm@ntu.edu.sg

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