

MASTER OF SCIENCE IN CHEMICAL MODELLING

Where Engineering Meets AI

*Integrating Molecular Simulation, Process ,
Modelling, & Machine-Learning Methods for the
Chemical & Biotech Industries*



WHAT IS THE MASTER OF CHEMICAL MODELLING 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 Modelling is for:

-  Science and engineering graduates
-  Professionals seeking upskilling in modelling and AI
-  Those aiming for careers in R&D, digitalisation or Industry 4.0 roles.

WHAT IS IN IT FOR ME?



Core Focus: Master chemical process modelling, optimisation, and AI-driven analytics



Interdisciplinary: Integrates chemistry, engineering, data science & bioengineering



Industry-ready: Apply modelling tools to pharma, biotech & chemical process



Flexible Format: Night & hybrid classes for working professionals



Career Boost: Build high-demand skills for roles in R&D, digitalisation, and smart manufacturing

Course Summary

- Molecular and process-scale modelling
- Machine learning for engineering problems
- Core training in statistics and optimisation
- Data mining for chemical and bioengineering
- Simulation in pharma and biotech processes
- Tools for bioimaging and biomedical modelling

Programme Structure

Duration: 1 – 2 Years

Mode: Coursework Based, Evening Classes

Format: In-person & Online Hybrid

Intake: August 2026

Career Prospect

Public Sector:

- NEA, PUB, EMA – Process modelling, emission control
- MOM, SCDF – Safety and environmental simulation
- MOE, Polytechnics – Research & teaching roles

Private Sector:

- Shell, GSK, Micron, Evonik – R&D, materials & pharma modelling
- Pfizer, Novartis, BASF – Drug development, QA, optimization
- Startups & biotech – AI-driven chemical design

Admission Requirements

- Bachelor's degree with minimum Honours (Distinction) or equivalent from a reputable university; majoring in Chemistry, Chemical Engineering, Bioengineering or related fields
- TOEFL ≥ 85 / IELTS ≥ 6.0
(if your university first degree was not taught in the English language)

Graduation Requirements

- Complete a minimum of 30 AUs
- A minimum CGPA of 2.5

Contact Us

Email: cceb-msccm@ntu.edu.sg



COURSE PROGRAMME

Core Modules

CH6410	Numerical Methods for Chemical Modelling
CH6420	Advanced Statistics for Data Science Analytics for Chemical Engineering
CH6430	Data Mining in Chemical Engineering and Bioengineering
CH6440	Introduction to Optimization Using AI in Chemical Engineering

Elective Modules

CH6450	Molecular Modelling
CH6460	AI for Chemical Sciences
CH6470	Computational Design of Catalysts
CH6480	Computational Material Sciences
CH6490	Process Design, Optimization and Supply Chain
CH6510	Physics-Informed Machine Learning in Engineering Applications
CH6520	Applications of Modelling and Simulation in Pharmaceutical Processes
CH6530	Data-Driven Computational Fluid Dynamics for Chemical Engineering Applications
BG6810	Bioimaging Analysis
BG6820	Digital Twin of Human: Enabling Precision Health
BG6830	Quantitative Methods for Bioengineering
CH6540	Project Management in Digital World
CH6550	MSc Research on Chemical Modelling I
CH6551	MSc Research on Chemical Modelling II
CH6552	Professional Internship I
CH6553	Professional Internship II
CH6554	Lab Rotation (0 AU)
CH6555	Academic Communications (0 AU)

**All courses are of 3 Academic Units (3 AUs) unless stated otherwise*