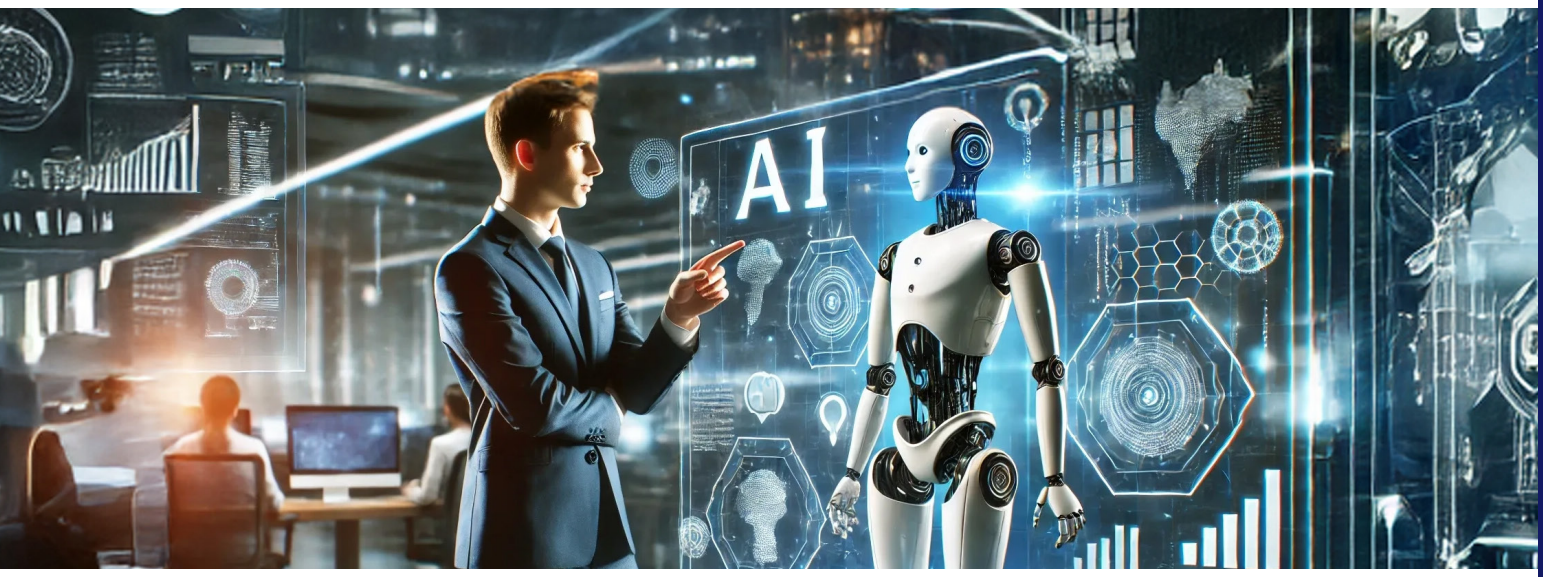
NANYANG TECHNOLOGICAL UNIVERSITY
SINGAPORE

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

Master of Science in CHEMICAL MODELLING



The **Master of Science in Chemical Modelling (MScCM)** is a cutting-edge programme that integrates chemistry, materials science, chemical engineering, bioengineering, and artificial intelligence to address real-world industrial and research challenges. The curriculum focuses on computational techniques, process simulation, and data-driven modelling, enabling students to gain hands-on experience in molecular design, catalyst development, and materials discovery. This programme equips graduates with interdisciplinary scientific and technological skills, empowering them to drive innovation in sectors such as pharmaceuticals, petrochemicals, and advanced manufacturing.

Learn More:

Scan the QR code for more information

Programme Features

Develop professional expertise in machine learning for materials design, process simulation, and chemical applications. Gain hands-on experience in data-driven modelling, catalyst design, and materials innovation. Students may choose to specialise in Chemistry and Materials or Chemical and Bioengineering, allowing them to tailor their own learning pathway.

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**: Evening classes for working professionals
- **Career Boost**: Build high-demand skills for roles in R&D, digitalisation, and smart manufacturing

Programme Structure

Duration: Full-time (1 – 2 Years) | Part-time (2 – 4 Years)
Mode: Coursework Based
Format: In-person
Intake: August 2026

Students may independently pursue internships and research projects within the programme.

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 / 5.0
- Fulfil a minimum candidature of 3 Trimesters for Full-time students and 6 Trimesters for Part-time students.

Tuition Fees

- AY26-27: S$ 51,012 (30 AU)
- ~SGD 1,700 per AU for AY26/27.
- Costs above includes 9% tax

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

Non-Credit Bearing Courses

CH6554	Lab Rotation
CH6555	Academic Communications